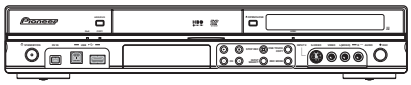
Pioneer sound.vision.soul

# Service Manual



DVR-650H-K

ORDER NO.
**RRV3567**

## DVD RECORDER

# DVR-650H-K
# DVR-550H-K
# DVR-450H-S

**THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).**

| Model | Type | Power Requirement | Region No. | Serial No. Please confirm 3rd & 4th alphabetical letters. |
|---|---|---|---|---|
| DVR-650H-K | KCXV | AC 120 V | 1 | &&DL######$$ |
| DVR-550H-K | KCXV | AC 120 V | 1 | &&DL######$$ |
| DVR-450H-S | KCXV | AC 120 V | 1 | &&DL######$$ |

For details, refer to "Important Check Points for good servicing".

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ⓒ**PIONEER CORPORATION 2007**

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# SAFETY INFORMATION

**This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.**
**Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.**

WARNING
This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

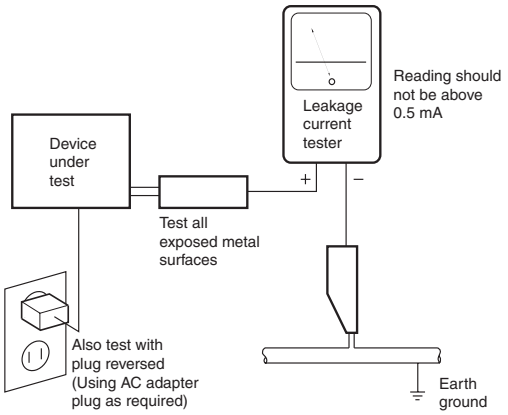
## (FOR USA MODEL ONLY)

### 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.


Reading should not be above 0.5 mA
Leakage current tester
Device under test
+
–
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

**ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.**

### 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

## ■ LABEL CHECK

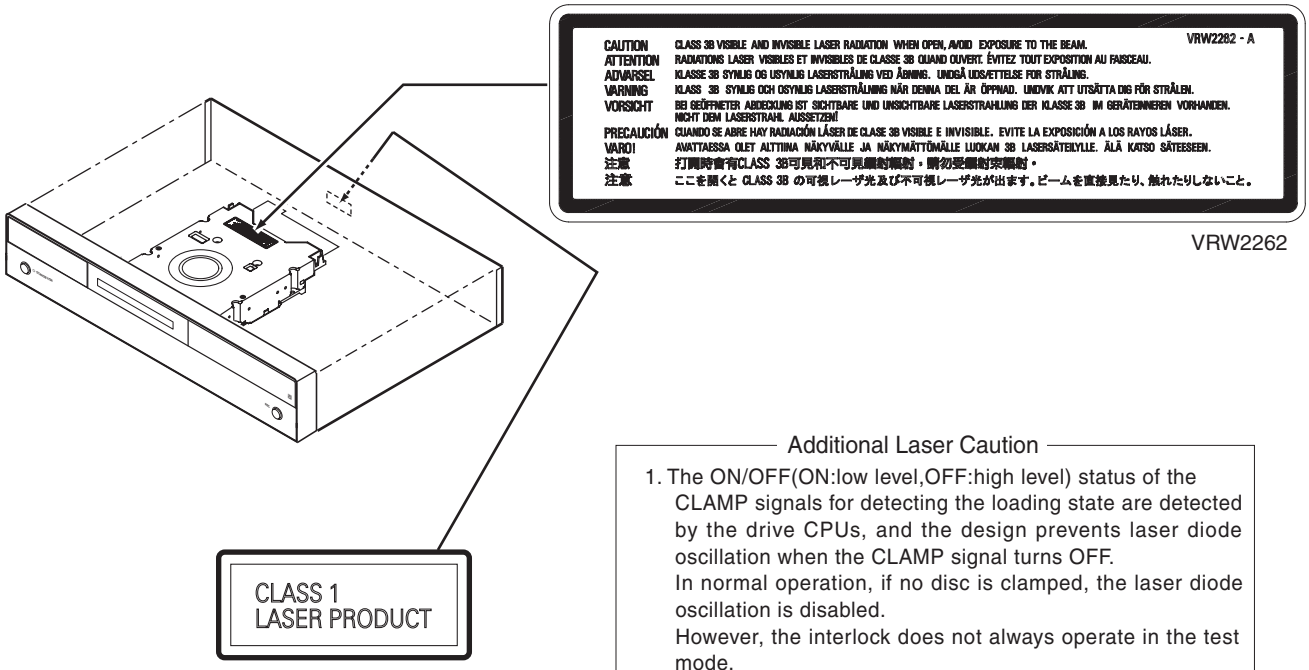
**WARNING!**

The laser component is capable of emitting radiation exceeding the limit for CLASS 1. A specially instructed person should do servicing operation of the apparatus.

### Laser Pickup specifications and Laser characteristics

For CD
- Wave length : 785 nm
- Operating output :
  - Read mode : 1.07 mW (CW), Class1
- Maximum output : Class1M

For DVD
- Wave length : 660 nm
- Operating output :
  - Read mode : 1.08 mW, Class1
  - Write mode : 21.89 mW (Pulse), Class1M
- Maximum output : Class2M


VRW2282 - A
CAUTION CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO THE BEAM.
ATTENTION RADIATIONS LASER VISIBLES ET INVISIBLES DE CLASSE 3B QUAND OUVERT. ÉVITEZ TOUT EXPOSITION AU FAISCEAU.
ADVARSEL KLASSE 3B SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARNING KLASS 3B SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. UNDVIK ATT UTSÄTTA DIG FÖR STRÅLEN.
VORSICHT BEI GEÖFFNETER ABDECKUNG IST SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG DER KLASSE 3B IM GERÄTEINNEREN VORHANDEN. NICHT DEM LASERSTRAHL AUSSETZEN!
PRECAUCIÓN CUANDO SE ABRE HAY RADIACIÓN LÁSER DE CLASE 3B VISIBLE E INVISIBLE. EVITE LA EXPOSICIÓN A LOS RAYOS LÁSER.
VARO! AVATTAESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LUOKAN 3B LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
注意 打開時會有CLASS 3B可見和不可見雷射輻射・開啓時雷射束輻射・
注意 ここを開くと CLASS 3B の可視レーザ光及び不可視レーザ光が出ます。ビームを直接見たり、触れたりしないこと。
CLASS 1
LASER PRODUCT

VRW2262

### Additional Laser Caution

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
   In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
   However, the interlock does not always operate in the test mode.

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

## [Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

### 1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

### 2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

### 3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

### 4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

### 5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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# 1. SERVICE PRECAUTIONS

**•When servicing this model, some service procedures may reset the customer settings to the factory default settings. Make sure to explain this to the customer.**

**•An HDD (Hard Disc Drive) is mounted in this product.**
**When an HDD becomes defective and inoperable, restoration of the user's data recorded on the HDD, or copying of the user's recorded data to other media (such as a new HDD) is totally impossible.**
**Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.**
**The user must be made aware that all recorded data are deleted if the HDD is intialized.**

## 1.1 NOTES ON SOLDERING

- For environmental protection, lead-free solder is used on the printed circuit boards mounted in this unit.
  Be sure to use lead-free solder and a soldering iron that can meet specifications for use with lead-free solders for repairs accompanied by reworking of soldering.

- Compared with conventional eutectic solders, lead-free solders have higher melting points, by approximately 40 ºC.
  Therefore, for lead-free soldering, the tip temperature of a soldering iron must be set to around 373 ºC in general, although the temperature depends on the heat capacity of the PC board on which reworking is required and the weight of the tip of the soldering iron.

Compared with eutectic solders, lead-free solders have higher bond strengths but slower wetting times and higher melting temperatures (hard to melt/easy to harden).

The following lead-free solders are available as service parts:
- Parts numbers of lead-free solder:
  GYP1006 1.0 in dia.
  GYP1007 0.6 in dia.
  GYP1008 0.3 in dia.

# 1.2 NOTES ON HANDLING THE HDD

### (1) Cautions on Handling the HDD

- The HDD is very sensitive to shocks and vibrations. Care must be taken especially during operation (when the power is on).
- The HDD is very sensitive to electrostatic charges.
- Rapid change in temperature or humidity may cause deterioration of the HDD.

Note: After receiving damage caused by any above-mentioned factors, the HDD may operate normally for dozens or some hundreds of hours but then suddenly crash. If you are certain you have damaged a new repair part (HDD) while making repairs, do not use the part.

The HDD is about 10 times as sensitive to shock during operation than during nonoperation.

**Reference: Main specifications on damage to the HDD**

| | During operation | During noperation |
|---|---|---|
| Shock G (acceleration) | <approx. 20 G | <approx. 200 G |
| Temperature change | < 20°C/hour | |
| Moisture change | < 20%/hour | |

**Reference: Estimate value of falling distance vs. shock (G) when the HDD is dropped without protection**

| Falling distance \ Landing surface | Granite surface | Concrete floor | Synthetic-resin-coated table | Antistatic sponge |
|---|---|---|---|---|
| 0.5 inch / 12.7 mm | 387 | 217 | 200 | 26 |
| 1.0 inch / 25.4 mm | 595 | 457 | 310 | 37 |
| 2.0 inch / 50.8 mm | 1133 | 600 | 680 | 70 |
| 4.0 inch / 101.6 mm | 1795 | 1040 | 1050 | 267 |

### (2) Cautions on handling the product on which the HDD is mounted or the HDD as a repair part, and examples of dangerous handling

**[Cautions on handling the product on which the HDD is mounted]**

- While the unit is turned on, the HDD is always in operation. Be sure NOT to impart shock to the unit.

**● Examples of dangerous handling: while the power is on**

- Bumping on the bonnet
- Dropping an object, such as a small screwdriver or remote control unit, onto the bonnet, or bumping an object against the cabinet
- Moving the unit by dragging
- Stacking another product on the unit

Note: Be sure NOT to impart shock, such as bumping or hitting a screwdriver against the HDD, during diagnosis with the bonnet open.

**● Examples of dangerous handling: while the power is off**

- Imparting strong shock, although the HDD is more resistant to shock when the power is off
- Dropping the unit from a height of several centimeters, or after lifting one side of the unit up, then letting the unit drop.

- Do NOT move the unit immediately after the power is turned off. Wait at least 30 seconds after the indication on the FL display changed from POWER OFF to the clock indication before moving the unit. If the AC power cord is accidentally disconnected before turning the unit off, wait at least for one minute before moving it. In this case, damage to the HDD caused by sudden shutoff may be small, because the emergency relief mechanism is activated. However, if sudden shutoff occurrs during recording or playback, recorded data may be damaged. Be sure to check operations.

**[Cautions on handling the HDD as a repair part]**

1. Handle the HDD in a safe environment:
   - Handle the HDD over an antistatic pad that can also absorb shock.
   - Wear wrist bands to prevent electrostatic charges generated in your body from affecting the HDD.

2. The following must be observed when handling the HDD:
   - Handle one HDD at a time. Do NOT hold several HDDs at the same time.
   - Grip the HDD on both sides so that you do not touch its terminals or circuit boards.
   - Do NOT stack one HDD onto another HDD (even if the HDDs are protected in antistatic bags).
   - Do NOT bump the HDDs against one another.
   - Do NOT bump any tool, such as a screwdriver, or other hard object against the HDD.
   - When a repair part (HDD) is transported and there is a large temperature difference between outdoors and indoors, to the indoor, leave it in its package for about a half day to gradually cool or warm the HDD to room temperature before unpacking it.

**[Notes on packing for shipment]**

- When returning a defective HDD for analysis, handle with care as if it were a good product. Otherwise, the results of analysis may not be correct.
- When packing, use the antistatic bag and packing materials in which the repair part for service was delivered. Attach a copy of the slip for service or a memo stating symptoms in as much detail as possible.

## ■ Outline and part No. of the HDDs

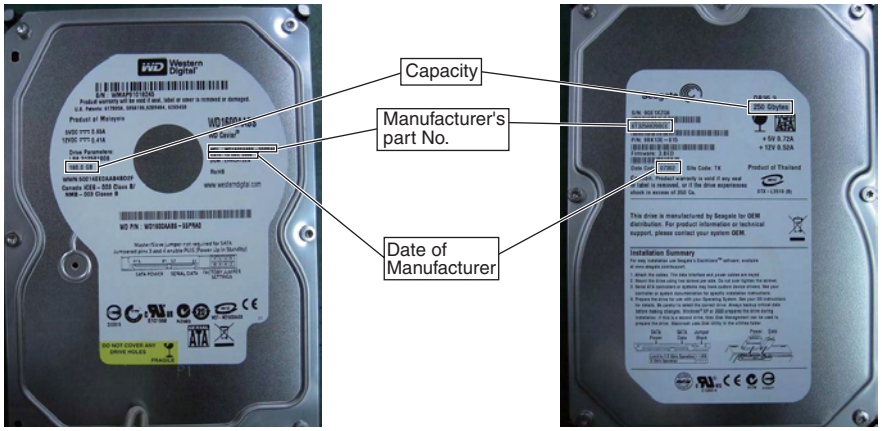
*Pioneer's part No. is not stamped.

| Model Name | Capacity | SEAGATE | |
|---|---|---|---|
| | | Pioneer's Part No. (for service) | Manufacture's Part No. |
| DVR-650H-K | 250GB | VXF1131 | ST3250820SCE |
| DVR-550H-K<br>DVR-450H-S | 160GB | VXF1137 | WD1600AABS-xxPRAx |

- When replacing the HDD, carefully check the capacity and manufacturer's part No. on the part label to avoid replacing with a similar but inappropriate product. You can also check the model No. of the mounted HDD on the Service mode screen.
- Do NOT use repair parts, such as commercially available HDDs, other than those designated above, as their functions, performance or reliability cannot be guaranteed.

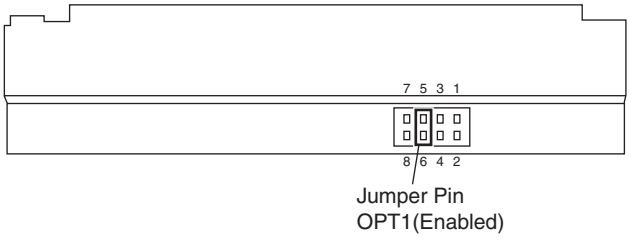
Wistern Digital(160GB)

Seagate(250GB)




## ■ Confirmation of the jumper pin location of the HDD

VXF1137(DVR-550H-K, DVR-450H-S : 160GB)



# 1.3 NOTES ON REPLACEMENT OF THE SDRAM

## Note when replacing the SDRAM

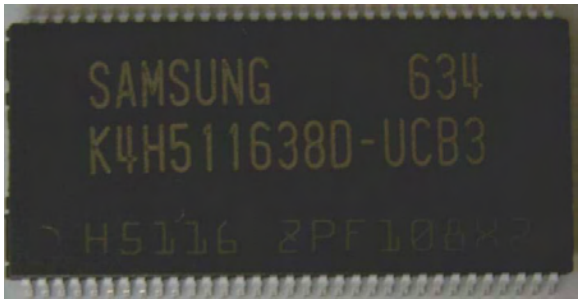
When replacement of the SDRAM (IC1201 or IC1221) on the MAIN Assy is required, identify the manufacturer of the SDRAM.
If the SDRAM that needs replacement was manufactured by ELPIDA, both IC1201 and IC1221 must be replaced at the same time.
SDRAMs for service are manufactured by SAMSUNG.

**• How to identify the manufacturer**

Confirm the name of the manufacturer stamped on the surface of the part.

By ELPIDA (replacement of both SDRAMs required)

By SAMSUNG (replacement of only the defective SDRAM possible)




**• Measures to be taken**

① If the SDRAM that needs replacement was manufactured by ELPIDA:
Replace both IC1201 and IC1221 at the same time.
② If the SDRAM that needs replacement was manufactured by SAMSUNG:
Replacement of only the defective SDRAM (IC1201 or IC1221) is possible.

**• Possible malfunctions**

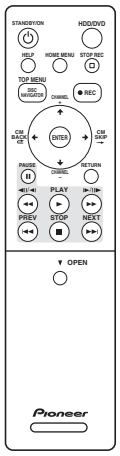
If SDRAMs made by different manufacturers are mounted on the MAIN Assy, the following malfunctions may occur:
① The power does not come on.
② High-speed dubbing disabled
③ Other malfunctions related to the SDRAM

# 2. SPECIFICATIONS

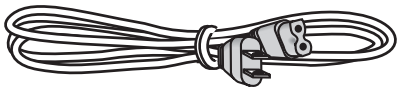
## 2.1 ACCESSORIES

For DVR-650H-K/KCXV

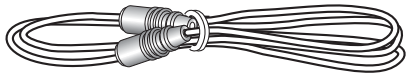
• Remote control ×1
(VXX3223)



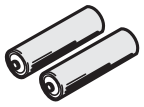

• Power cable ×1
(ADG7021 )



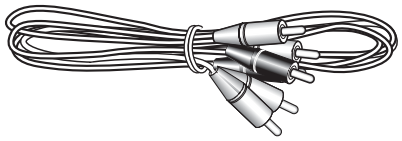
• RF antenna cable ×1
(VDE1088)



• Dry cell batteries ×2
(AA/R6P)



• Audio / Video cable ×1
(red/white/yellow)
(VDE1077)



• Operating Instructions (English)(VRB1462)
• Operating Instructions (French)(VRC1382)
• Quick Start Guide (English)(VRG1021)
• Quick Start Guide (French)(VRG1022)
• Warranty Card

# 2.2 SPECIFICATIONS

## General

Power requirements ..... 120 V, 60 Hz
Power consumption
DVR-650H-K..... 48 W
DVR-550H-K..... 46 W
DVR-450H-S..... 42 W
Power consumption in standby mode..... 0.33 W
(Front panel display: off)
Weight
DVR-650H-K..... 4.1 kg (9 lbs. 1 oz.)
DVR-550H-K..... 4.1 kg (9 lbs. 1 oz.)
DVR-450H-S..... 4.1 kg (9 lbs. 1 oz.)
Dimensions
..... 420 mm (W) x 75 mm (H) x 288 mm (D)
($16^{9}/_{16}$ in. (W) x 3 in. (H) 11 $^{6}/_{16}$ in. (D))
Operating temperature .....+5 °C to +35 °C
(+41 °F to +95 °F)
Operating humidity
.....5 % to 85 % (no condensation)
TV system..... NTSC

**Readable discs**
DVD-Video, DVD-RW, DVD-R, DVD+R, DVD+RW, DVD-RAM, Video CD, Super VCD, CD, CD-R/-RW (WMA, MP3, JPEG, CD-DA, DivX)

**Recording discs and formats**
DVD-R/-RW: VR mode and Video mode
DVD+R/+RW: +VR mode
DVD-RAM: VR mode
DVD-R DL: VR mode and Video mode
DVD+R DL: +VR mode

**Video recording format**
Sampling frequency..... 13.5 MHz
Compression format ..... MPEG

**Audio recording format**
Sampling frequency.....48 kHz
Compression format ..... Dolby Digital or Linear PCM
(uncompressed)

**Recording time**
**HDD**
**DVR-650H-K (250 GB)**
XP+..... Approx. 36 h
Fine (XP) ..... Approx. 53 h
Standard Play (SP)..... Approx. 106 h
Long Play (LP)..... Approx. 212 h
Extended Play (EP) ..... Approx. 319 h
Super Long Play (SLP)..... Approx. 425 h
Super Extended Play (SEP) ..... Approx. 532 h
Manual Mode (MN)..... Approx. 36 h to 711 h
**DVR-550H-K/DVR-450H-S (160 GB)**
XP+..... Approx. 23 h
Fine (XP) ..... Approx. 34 h
Standard Play (SP)..... Approx. 68 h
Long Play (LP)..... Approx. 136 h
Extended Play (EP) ..... Approx. 204 h
Super Long Play (SLP)..... Approx. 272 h
Super Extended Play (SEP) ..... Approx. 340 h
Manual Mode (MN)..... Approx. 23 h to 455 h

**DVD-R/-RW, DVD+R/+RW, DVD-RAM**
Fine (XP) ..... Approx. 1 h
Standard Play (SP)..... Approx. 2 h
Long Play (LP)..... Approx. 4 h
Extended Play (EP) ..... Approx. 6 h
Super Long Play (SLP)..... Approx. 8 h
Super Extended Play (SEP) ..... Approx. 10 h
(DVD-R/-RW, DVD-RAM only)
Manual Mode (MN)
DVD-R/-RW/-RAM..... Approx. 1 h to 13 h
DVD+R/+RW ..... Approx. 1 h to 8 h

**DVD-R DL/DVD+R DL**
Fine (XP) ..... Approx. 1 h 51 m
Standard Play (SP)..... Approx. 3 h 35 m
Long Play (LP)..... Approx. 7 h 11 m
Extended Play (EP) ..... Approx. 10 h 46 m
Super Long Play (SLP)..... Approx. 14 h 21 m
Super Extended Play (SEP) ..... Approx. 17 h 57 m
(DVD-R DL only)
Manual Mode (MN)
DVD-R DL..... Approx. 1 h 51 m to 24 h
DVD+R DL..... Approx. 1 h 51 m to 14 h 21 m

## Timer

Programmes.....1 month/32 programmes
Clock.....Quartz lock
(12-hour digital display)

## Tuner

**Receivable channels**

VHF ..... 2 ch to 13 ch
UHF ..... 14 ch to 69 ch
CATV ..... C1 ch to C125 ch

## Input/Output

VHF/UHF antenna input/output terminal
..... VHF/UHF set 75 Ω (F-shape connector)
Video Input ..... Input 1, 3 (rear), 2 (front)
Input level ..... 1 Vp-p (75 Ω)
Jacks ..... RCA jack
Video Output ..... Output 1, 2
Output level ..... 1 Vp-p (75 Ω)
Jacks ..... RCA jack
S-Video Input ..... Input 1, 3 (rear), 2 (front)
Y (luminance) - Input level ..... 1 Vp-p (75 Ω)
C (colour) - Input level ..... 265 mVp-p (75 Ω)
Jacks ..... 4 pin mini DIN
S-Video Output ..... Output 1, 2
Y (luminance) - Output level ..... 1 Vp-p (75 Ω)
C (colour) - Output level ..... 265 mVp-p (75 Ω)
Jacks ..... 4 pin mini DIN
Component video output
Output level ..... Y: 1.0 Vp-p (75 Ω)
$P_B$, $P_R$: 648 mVp-p (75 Ω)
Jacks ..... RCA jacks
Audio Input ..... Input 1, 3 (rear), 2 (front) L/R
During audio input ..... 2 V rms (Input impedance: more than 22 kΩ)
Jacks ..... RCA jacks
Audio Output ..... Output 1, 2 L/R
During audio output ..... 2 V rms (Output impedance: less than 1.5 kΩ)
Jacks ..... RCA jacks
Control input ..... Mini jack
Digital audio output ..... Coaxial
DV input (DVR-650H-K and DVR-550H-K only)
..... 4 pin (front) (i.LINK/IEEE 1394 standard)
USB (DVR-650H-K and DVR-550H-K only)
..... Type A (front), Type B (front)
HDMI ..... 19 pin

## Supplied accessories

Remote control ..... 1
Dry cell batteries (AA/R6P) ..... 2
Audio / Video cable (red/white/yellow) ..... 1
RF antenna cable ..... 1
Power cable ..... 1
Operating Instructions

Note: The specifications and design of this product are subject to change without notice, due to improvement.

This product includes FontAvenue® fonts licenced by NEC Corporation. FontAvenue is a registered trademark of NEC Corporation.

Microsoft product screen shots reprinted with permission from Microsoft Corporation.

## 2.3 DISC/CONTENT FORMAT

| | HDD | DVD-R | | DVD-RW | | DVD+R | DVD +RW | DVD-RAM |
|---|---|---|---|---|---|---|---|---|
| Marks used in this manual | HDD | DVD (VR) *1 | DVD (Video) | DVD (VR) *1 | DVD (Video) *2 | DVD+R | DVD+RW | DVD-RAM *13, 16 |
| Logos | HDD HARD DISK DRIVE | DVD R | | DVD RW | DVD RW RW 2 | RW DVD+R | RW DVD+ReWritable RW DVD+ReWritable High Speed | DVD RAM |
| Re-recordable/ Erasable | ● | *3 | *3 | ● | ● | *3 | ● *14 | ● |
| Editing of recorded programmes | ● | ● | ● *4 | ● | ● *4 | ● *4 | ● *4 | ● |
| Recording of Copy-once protected material | ● | ● *12 | | ● *12 | | | | ● *12 |
| Playback in other players/recorders | n/a | *5 | ● *6 | *7 | ● *6 | ● *6, 15 | ● *8 | ● *9 |
| Chase play | ● | | | | | | | |
| 16:9 and 4:3 programme recording | ● | ● | | ● | | | | ● |
| Dual mono broadcast recording of both audio channels | ● *10, 11 | ● *11 | | ● *11 | | | | ● *11 |

### Notes to table

*1 Must be initialized for VR mode recording.
*2 Must be initialized for Video mode recording
*3 Erasable, but free space does not increase.
*4 Cannot erase sections, edit chapters or use playlist editing.
*5 Must be compatible with DVD-R (VR) playback.
*6 Finalize using this recorder (may not playback in some units).
*7 Must be compatible with DVD-RW (VR) playback.
*8 Must be compatible with DVD+RW playback.
*9 Must be compatible with DVD-RAM playback.
*10 Only when HDD Recording Format is set to Video Mode Off.
*11 Only when the recording mode is not set to LPCM.
*12 CPRM-compatible discs only.
*13 Take the disc out of the cartridge before use. Only Panasonic and Maxell discs have been tested to work reliably with this recorder. Discs from other makers may become unusable when recorded or edited.
*14 Erasing a title does not increase the available recording time, nor increase the number of recordable titles left.
*15 Must be compatible with DVD+R playback.
*16 Depending on the disc, it may have to be initialized before it can be recorded. In this case, initialization will take about an hour.

DVD is a trademark of DVD Format/Logo Licensing Corporation.

### Using DVD-R DL/DVD+R DL discs

DVD-R DL (Dual-Layer) and DVD+R DL (Double-Layer) discs contain two recordable layers on a single side, giving about 1.8 times the recording capacity of a conventional single-layer disc. This unit can record to both DVD-R DL and DVD+R DL discs.

- If you intend to play DVD-R DL (Video mode) or DVD+R DL discs recorded on this unit on other DVD recorders/players, you must finalize them. (Note that some DVD recorders/players may not play even finalized DL discs.)
- This logo indicates that the disc is a DVD-R DL or DVD+R DL disc:

Correct operation has been confirmed for DL discs:

- DVD-R DL ver. 3.0/2x to 4x
  Mitsubishi Kagaku Media (Verbatim)
- DVD-R DL ver. 3.0/2x to 8x
  Mitsubishi Kagaku Media (Verbatim)
  That's
  JVC
- DVD+R DL 2.4x
  Mitsubishi Kagaku Media (Verbatim)
  RICOH
- DVD+R DL 2.4x to 8x
  Mitsubishi Kagaku Media (Verbatim)
  RICOH

### About DualDisc playback

A DualDisc is a new two -sided disc, one side of which contains DVD content –video, audio, etc. –while the other side contains non-DVD content such as digital audio material.

The non-DVD, audio side of the disc is not compliant with the CD Audio specification and therefore may not play.

It is possible that when loading or ejecting a DualDisc, the opposite side to that being played will be scratched. Scratched discs may not be playable.

The DVD side of a DualDisc plays in this product. DVD-Audio content will not play.

For more detailed information on the DualDisc specification, please refer to the disc manufacturer or disc retailer.

### Other disc compatibility

In addition to DVD, this recorder is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the logos on the disc and/or disc packaging shown below. Note however that some disc types, such as recordable CD (and DVD), may be in an unplayable format — see below for further compatibility information.

### CD-R/-RW compatibility

This recorder cannot record CD-R or CD-RW discs.

- Readable formats: CD-Audio, Video CD, ISO 9660 CD-ROM* containing MP3, WMA, JPEG or DivX files
  *ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this recorder.
- Multi-session playback: Yes (except CD-Audio and Video CD)
- Unfinalized disc playback: CD-Audio only

### Compressed audio compatibility

- Compatible media: DVD-ROM, DVD-R/-RW, DVD+R/+RW, DVD-RAM, CD-ROM, CD-R, CD-RW
  DVR-650H-K/DVR-550H-K only: USB
- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA)
- Sampling rates: 32 kHz, 44.1 kHz or 48 kHz
- Bit-rates: Any (128 kbps or higher recommended)

- Variable bit-rate (VBR) MP3 playback: Yes
- VBR WMA playback: No
- WMA encoder compatibility: Windows Media Codec 8 (files encoded using Windows Media Codec 9 may be playable but some parts of the specification are not supported; specifically, Pro, Lossless, Voice and VBR)
- DRM (Digital Rights Management)[1] file playback: No
- File extensions: .mp3, .wma (these must be used for the recorder to recognize MP3 and WMA files – do not use for other file types)
- File structure: Up to 99 folders/999 files (if these limits are exceeded, only files and folders up to these limits are playable)

### WMA (Windows Media™ Audio) compatibility

This recorder can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. WMA content can be encoded by using Windows Media Player for Windows XP, Windows Media Player 9 or Windows Media Player 10 series.

Windows Media is a trademark of Microsoft Corporation.

This product includes technology owned by Microsoft Corporation and cannot be used or distributed without a license from Microsoft Licensing, Inc.

### DivX video compatibility

DivX is a compressed digital video format created by the DivX® video codec from DivX, Inc. This recorder can play DivX video files burned on CD-R/-RW/-ROM discs. Keeping the same terminology as DVD-Video, individual DivX video files are called “Titles”. When naming files/titles on a CD-R/-RW disc prior to burning, keep in mind that by default they will be played in alphabetical order.

- Official DivX® Certified product.
- Plays all versions of DivX® video (including DivX® 6) with standard playback of DivX® media files.
- File extensions: .avi and .divx (these must be used for the recorder to recognize DivX video files). Note that all files with the .avi extension are recognized as MPEG4, but not all of these are necessarily DivX video files and therefore may not be playable on this recorder.
- File structure: Up to 99 folders or 999 files.

DivX, DivX Certified, and associated logos are trademarks of DivX, Inc. and are used under license.

**Note**

1 DRM (digital rights management) copy protection is a technology designed to prevent unauthorized copying by restricting playback, etc. of compressed audio files on devices other than the PC (or other recording equipment) used to record it. For detailed information, please see the instruction manuals or help files that came with your PC and/or software.

## DivX® VOD content

In order to play DivX VOD (video on demand) content on this recorder, you first need to register the recorder with your DivX VOD content provider. You do this by generating a DivX VOD registration code, which you submit to your provider.

Some DivX VOD content may only be playable a fixed number of times. When you load a disc containing this type of DivX VOD content, the remaining number of plays is shown on-screen and you then have the option of playing the disc (thereby using up one of the remaining plays), or stopping. If you load a disc that contains expired DivX VOD content (for example, content that has zero remaining plays), the message **Rental Expired** is displayed.

If your DivX VOD content allows an unlimited number of plays, then you may load the disc into your recorder and play the content as often as you like, and no message will be displayed.

**Important**

- DivX VOD content is protected by a DRM system. This restricts playback of content to specific, registered devices.
- If you load a disc that contains DivX VOD content not authorized for this recorder, the message **Authorization Error** is displayed and the content will not play.
- Resetting the recorder will not cause you to lose your registration code.

## JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF 2.2* still image files
  *File format used by digital still cameras
- Sampling ratio: 4:4:4, 4:2:2, 4:2:0
- Horizontal resolution: 160 to 5120 pixels
- Vertical resolution: 120 to 3840 pixels
- Progressive JPEG compatible: No
- File extensions: .jpg, .jpeg, .jpe, .jif, .jfif (must be used for the recorder to recognize JPEG files – do not use for other file types)
- File structure: The recorder can load up to 99 folders/999 files at one time (if there are more files/folders that this on the disc then more can be reloaded)

### PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Discs recorded in packet write mode (UDF format) are not compatible with this recorder.

Check the DVD-R/-RW or CD-R/-RW software disc boxes for additional compatibility information.

### Dolby Digital

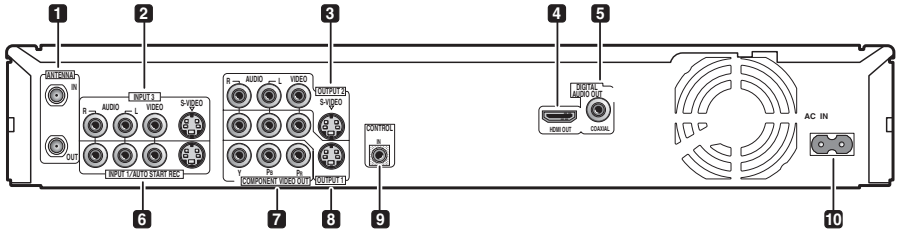
Manufactured under license from Dolby Laboratories. “Dolby” and the double-D symbol are trademarks of Dolby Laboratories.

### DTS

“DTS” and “DTS Digital Out” are registered trademarks of DTS, Inc.

# 2.4 PANEL FACILITIES

## ◆ Rear Panel




**1 ANTENNA IN (RF IN)/OUT**
Connect your TV antenna to the **ANTENNA IN (RF IN)** jack. The signal is passed through to the **ANTENNA OUT** jack for connection to your TV.

**2 INPUT 3**
Stereo analog audio, video and S-video inputs for connection to a satellite receiver, set top box, etc.

**3 OUTPUT 2**
Stereo analog audio, video and S-video outputs for connection to a TV or AV amplifier/receiver.

**4 HDMI OUT**
HDMI output for high quality digital audio and video.

**5 DIGITAL AUDIO OUT (COAXIAL)**
Coaxial digital audio jack for connecting to an AV amplifier/receiver, Dolby Digital/DTS decoder or other equipment with a digital input.

**6 INPUT 1/AUTO START REC**
Stereo analog audio, video and S-video inputs for connection to a satellite receiver, set top box, etc.

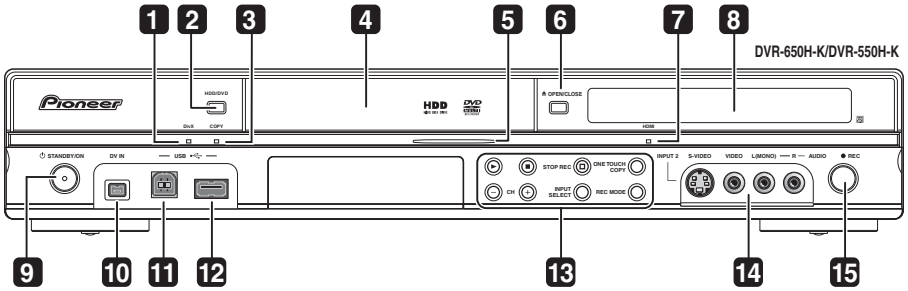
**7 COMPONENT VIDEO OUT**
A high-quality video output for connecting to a TV or monitor with a component video input.

**8 OUTPUT 1**
Stereo analog audio, video and S-video outputs for connection to a TV or AV amplifier/receiver.

**9 CONTROL IN**
Use to control this recorder from the remote sensor of another Pioneer component with a **CONTROL OUT** terminal and bearing the Pioneer mark. Connect the **CONTROL OUT** of the other component to the **CONTROL IN** of this recorder using a mini-plug cord.

**10 AC IN – Power inlet**
Connect to a power outlet using the supplied power cable after making all other connections.

## ◆Front panel




**1 DivX indicator**
Lights when this recorder plays DivX video files.

**2 HDD/DVD**
Press to switch between HDD and DVD for recording and playback.

**3 COPY indicator**
Lights when copying is underway.

**4 Disc tray**

**5 HDD/DVD indicator**
Indicator lights blue when the hard disk (HDD) is selected; orange when the DVD drive is selected.

**6 ⏏ OPEN/CLOSE**
Press to open/close the disc tray.

**7 HDMI indicator**
Lights when this recorder is connected to HDMI (HDCP) compatible component.

**8 Front panel display and IR remote sensor**

**9 ⏻ STANDBY/ON**
Press to switch the recorder on/into standby.

**10 DV IN**
A DV input i.LINK connector, suitable for connecting a DV camcorder.

**11 USB port (Type B)**
USB port for connecting a PictBridge-compatible printer or PC.

**12 USB port (Type A)**
USB port for connecting a digital camera, keyboard or other USB device.

**13 ►**
Press to start or restart playback.

**■**
Press to stop playback.

**□ STOP REC**
Press to stop recording.

**ONE TOUCH COPY**
Press to start One Touch Copy of the currently playing title to DVD or the HDD.

**CH +/–**
Use to change channels, skip chapters/tracks, etc.

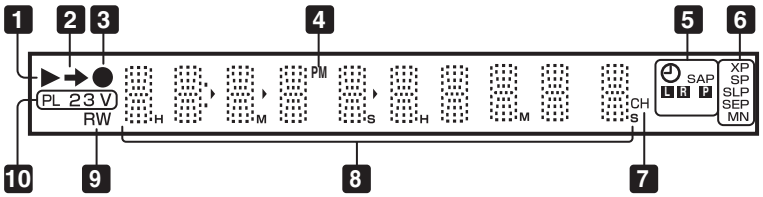
**INPUT SELECT**
Press to change the input used for recording.

**REC MODE**
Press repeatedly to cycle through recording modes (picture quality).

**14 INPUT 2**
Audio/video input (stereo analog audio; composite and S-video), especially suitable for camcorders, game consoles, portable audio, etc.

**15 ● REC**
Press to start recording. Press repeatedly to set the recording time in 30 minute blocks.

## ◆ Display




**1** ▶
Lights during playback; blinks when playback is paused.

**2** ➡
Lights when copying.

**3** ●
Lights during recording; blinks when recording is paused.

**4 PM**
Lights to indicate PM (after midday) for the clock display.

**5** ◴
Lights when a timer recording has been set. (Indicator blinks if the timer has been set to DVD but there isn't a recordable disc loaded, or the timer has been set to HDD but the HDD is not recordable.)

**SAP**
Lights when the currently selected TV channel has a Second Audio Programme channel.

**L R**
Indicates which channels are recorded when **Dual Mono** is selected.

**P**
Lights when the component video output is set to progressive scan.

**6 Recording quality indicators**

**XP**
Lights when the recording mode is set to **XP** (best quality).

**SP**
Lights when the recording mode is set to **SP** (standard play).

**LP/SLP**
Lights when the recording mode is set to **LP** (long play) or **SLP** (super-long play).

**EP/SEP**
Lights when the recording mode is set to **EP** (extended play) or **SEP** (super-extended play).

**MN**
Lights when the recording mode is set to **MN** (manual recording level) mode.

**7 CH**
Channel indicator for the built-in TV tuner.

**8 Character display**

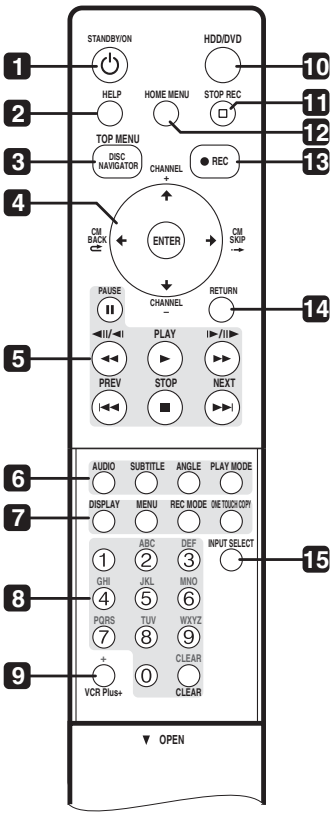
**9 R/RW**
Lights when a recordable DVD-R or DVD-RW disc is loaded.

**10 PL**
Lights when a VR mode disc is loaded and the recorder is in Play List mode.

**2 3**
Shows the remote control mode (if nothing is displayed, the remote control mode is 1).

**V**
Lights when an unfinalized Video mode disc is loaded.

## ◆ Remote Control Unit




**1 ⏻ STANDBY/ON**
Press to switch the recorder on/into standby.

**2 HELP**
Press for help on how to use the current GUI screen.

**3 DISC NAVIGATOR / TOP MENU**
Press to display the Disc Navigator screen, or the top menu if a DVD-Video or finalized DVD-R/-RW (Video) disc is loaded.

**4 ↑/↓/←/→ and ENTER**
Used to navigate all on-screen displays. Press **ENTER** to select the currently highlighted option.

**CM BACK (commercial back)**
Press repeatedly to skip progressively backward through the video playing.

**CM SKIP (commercial skip)**
Press repeatedly to skip progressively forward through the video playing.

**CHANNEL +/–**
Press to change the channel of the built-in TV tuner.

**5 Playback controls**

**II PAUSE**
Press to pause playback or recording.

**► PLAY**
Press to start playback.

**■ STOP**
Press to stop playback.

**I◄◄ ►►I**
Press to skip to the previous or next title/chapter/track/folder; or to display the previous or next menu page.

**◄◄ ►►**
Press to start reverse or forward scanning. Press again to change the speed.

**◄II/◄I I► II►**
While paused, press and hold to start slow-motion playback. Press repeatedly to change the playback speed.

While paused, press to advance a single frame in either direction.

**6 playback function buttons**

**AUDIO**
Press to change the audio language or channel. (When the recorder is stopped, press to change the tuner audio.)

**SUBTITLE**
Press to display/change the subtitles included in multilingual DVD-Video discs.

**ANGLE**
Press to switch camera angles on discs with multi-angle scenes.

**PLAY MODE**
Press to change the play mode (search, repeat, programme play, etc.).

**7 DISPLAY**
Displays/changes the on-screen information displays.

**MENU**
Press to display the disc menu if a DVD-Video, finalized DVD-R/-RW or finalized DVD+R/+RW disc is loaded.

**REC MODE**
Press repeatedly to change the recording mode (picture quality).

**ONE TOUCH COPY**
Press to start One Touch Copy of the currently playing title to DVD or the HDD.

**8 Number buttons, CLEAR**
Use the number buttons for track/chapter/title selection; channel selection, and so on. The same buttons can also be used to enter names for titles, discs and so on.

Use **CLEAR** to clear an entry and start again.

**9 VCR Plus+®**
Press then use the number buttons to enter a PlusCode® programming number for timer recording.

**10 HDD/DVD**
Press to select the hard disk (HDD) or DVD for recording and playback.

**11 □ STOP REC**
Press to stop recording.

**12 HOME MENU**
Press to display the Home Menu, from which you can navigate all the functions of the recorder.

**13 ● REC**
Press to start recording. Press repeatedly to set the recording time in blocks of 30 mins.

**14 RETURN**
Press to go back one level in the on-screen menu or display.

**15 INPUT SELECT**
Press to change the input to use for recording.

# 3. BASIC ITEMS FOR SERVICE

## 3.1 CHECK POINTS AFTER SERVICING

To keep the product quality after servicing, confirm recommended check points shown below.

| No. | Procedures | Item to be checked |
|---|---|---|
| 1 | Confirm the firmware version on the first screen on Service Mode. Also check the compatibility of each firmware (OK or NG). | The version of each firmware must be the latest. All of firmware compatibility must be "OK".<br>Update firmware to the latest one, if it is not the latest or the compatibility is "NG". |
| 2 | Confirm whether the customer complain has been solved. If the customer complain occurs with the specific disc, use it for the operation check. | The customer complain must not be reappeared.<br>Video, audio and operations must be normal. |
| 3 | Perform the HDD physical test (Self-Test on HDD check mode). | "NG" must not be appeared. |
| 4 | Confirm playback error rates at the innermost and outermost tracks by using the following disc.<br>DVD test disc (GGV1025) | The error rates must be less than 8.0e-4. |
| 5 | Record from the tuner (or an external source) to the HDD for 1 minute. After that, play back the content. | Video, audio and operations must be normal. |
| 6 | Copy the recorded content on the HDD in the previous step to a DVD-RW disc. After that, play back the disc. | Video, audio and operations must be normal. |
| 7 | Confirm the user setting, and whether the test-recorded content have been deleted. | Be sure to delete the test-recorded content on the HDD. |
| 8 | Check the appearance of the product. | No scratches or dirt on its appearance after receiving it for service. |

See the table below for the items to be checked regarding video and audio:

| Items to be checked regarding video | Item to be checked regarding audio |
|---|---|
| Block noise | Distortion |
| Horizontal noise | Noise |
| Dot noise | Volume too low |
| Disturbed image (video jumpiness) | Volume too high |
| Too dark | Volume fluctuating |
| Too bright | Sound interrupted |
| Mottled color | |

### ◆ Necessary Procedure List When Replacing Assys

**Following is the surely necessary procedures and the product state after changing, when replacing next ASSYs.**

| Replaced ASSY | Necessary setting | State after replacing | |
|---|---|---|---|
| | | User setting | HDD contents |
| MAIN ASSY | 1. Model setting<br>2. LD power adjustment<br>3. CPRM setting<br>4. Firmware update | × | ○ |
| TURB ASSY | 1. Model setting<br>2. CPRM setting<br>3. Firmware update | × | ○ |
| LOADER ASSY | 1. LD power adjustment | ○ | ○ |
| HDD | 1. CPRM setting | ○ | × |

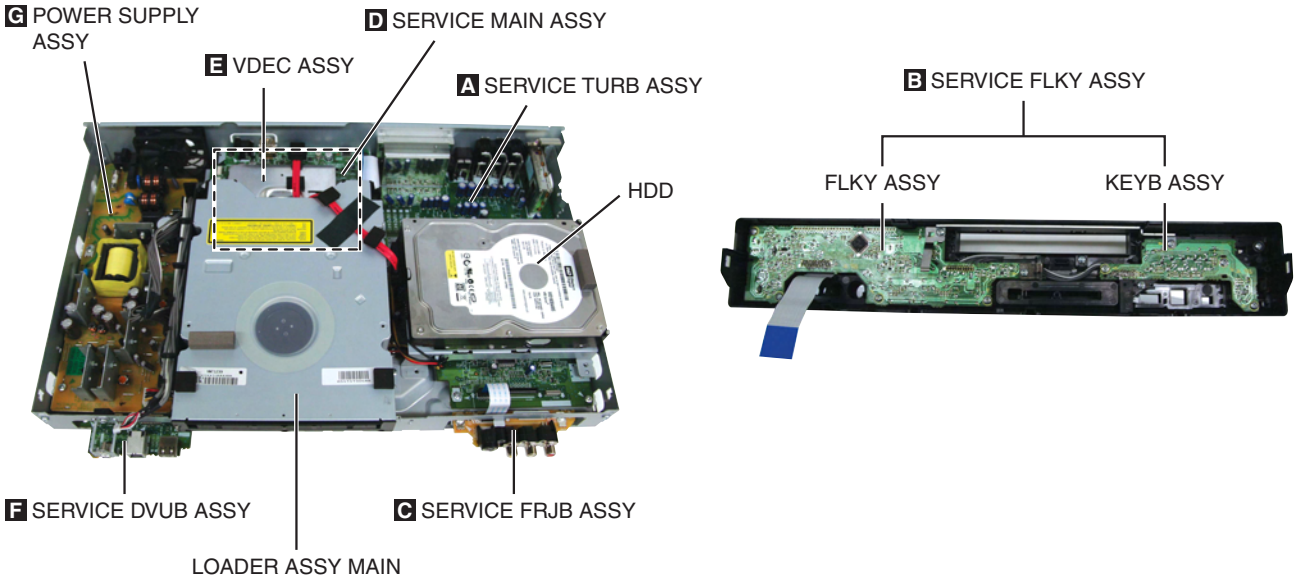
# 3.2 QUICK REFERENCE

| Description of work | Procedure | Jigs |
|---|---|---|
| LD power adjustment | [ESC]+[CX]+[1]+[0] | GGF1381 : Service Remote Control Unit |
| | | GGV1054 : CD-ROM (CDT-313) |
| | | GGV1036 : DVD-ROM DL (DVDT-002) |
| | | GGV1278 : Blank DVD-R (That's DR-C12WTY5PA) |
| | | GGV1282 : Blank DVD-RW (JVC VD-W120XH5) |
| | | GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S) |
| ID input | [ESC]+[STEREO] | GGF1381 : Service Remote Control Unit |
| | | GGV1305 : ID disc |
| Firmware update | [REC STOP]+[PLAY] | Update disc |
| Version check | [ESC]+[DISP] | GGF1381 : Service Remote Control Unit |
| Error Rate Measurement | [ESC]+[DISP]+[DIG/ANA] × twice | GGF1381 : Service Remote Control Unit |
| | | Operation check disc (See remarks) |
| HDD Check Mode | [ESC]+[CX]+[0]+[1] | GGF1381 : Service Remote Control Unit |
| Indication of VR-playback-related error log | [ESC]+[DISP]+[5]+[DIG/ANA] | GGF1381 : Service Remote Control Unit |
| Indication of VR-recording-related error log | [ESC]+[DISP]+[4]+[DIG/ANA] × 3times | GGF1381 : Service Remote Control Unit |

**Remarks**

| | | |
|---|---|---|
| Disc for check of recording/playback operations<br>(Note)<br>When judging the drive quality, make sure to use the operation check disc. | Operation check discs (manufacturers and model numbers) | Error rate threshold |
| | GGV1278 : Blank DVD-R (That's DR-C12WTY5PA) | 1.0e-3 or below |
| | GGV1279 : Blank DVD-R DL (MCM VHR21YD1) | L0 : 1.0e-3 or below |
| | | L1 : 3.3e-3 or below |
| | GGV1280 : Blank DVD+R (That's DR+120TY5PA) | 1.0e-3 or below |
| | GGV1281 : Blank DVD+R DL (MCM VTR21N1) | L0 : 1.0e-3 or below |
| | | L1 : 3.3e-3 or below |
| | GGV1189 : Blank DVD-RW (JVC VD-W120N10) | 1.0e-3 or below |
| | GGV1282 : Blank DVD-RW [RW2] (JVC VD-W120XH5) | 1.0e-3 or below |
| | GGV1283 : Blank DVD+RW (RICOH D4RWV-S3CW) | 1.0e-3 or below |
| | GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S) | 1.0e-3 or below |
| | GGV1036 : DVD-ROM DL (DVDT-002) | L0/L1 : 8.0e-4 or below |
| How to read error rate | X.Xe-Y<br>Y: The bigger the better,<br>X X: The smaller the better | |
| How to exit from Service Mode | [ESC] | |

# 3.3 PCB LOCATIONS




*NOTES:* ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

◆LIST OF ASSEMBLIES

| Mark | No. Description | Part No. |
|---|---|---|
| NSP | 1.. TUJB ASSY (DVR-650H-K, DVR-550H-K) | VWM2437 |
| NSP | 1.. TUJB ASSY (DVR-450H-S) | VWM2438 |
| | 2.. SERVICE TURB ASSY | VXX3251 |
| | 2.. SERVICE DVUB ASSY (DVR-650H-K, DVR-550H-K Only) | VXX3231 |
| NSP | 1.. FLKB ASSY | VWM2434 |
| | 2.. SERVICE FLKY ASSY | VXX3226 |
| | 3.. FLKY ASSY | |
| | 3.. KEYB ASSY | |
| | 2.. SERVICE FRJB ASSY | VXX3227 |
| | 1.. VDEC ASSY | VWV2304 |
| | 1.. SERVICE MAIN ASSY (DVR-650H-K, DVR-550H-K) | VXX3242 |
| | 1.. SERVICE MAIN ASSY (DVR-450H-S) | VXX3240 |
| ⚠ | 1.. POWER SUPPLY ASSY | VWR1408 |

# 3.4 JIGS LIST

## ■ Jigs List

| Name | Jig No. | Remarks |
|---|---|---|
| Service Remote Control Unit | GGF1381 | Adjustment, diagnosis |
| DVD Test Disc (DVD-Video) | GGV1025 | Check of DVD-Video |
| DVD Recorder Data Disc Type2 | ———— (*) | Diagnosis (ID data setting) |
| FFC Cable (40p) | GGD1436 | Diagnosis of MAIN Assy |
| FFC Cable (28p) | GGD1517 | Diagnosis of MAIN Assy |
| CD-ROM | GGV1054 | LD Power Adjustment |
| DVD-ROM DL | GGV1036 | LD Power Adjustment |
| Blank DVD-R | GGV1278 | LD Power Adjustment |
| Blank DVD-RW | GGV1282 | LD Power Adjustment |
| Blank DVD-RAM | GGV1284 | LD Power Adjustment |
| Disc Ejection Rod | GGF1529 | Emergency Disc Ejection |
| USB Cable | GGD1145 | USB Check Mode |

(*) Be sure to use the latest disc (Type 2).
In Feb, 2007, the latest disc is GGV1305.

## ■ Lubricants and Glues List

| Name | Lubricants and Glues No. | Remarks |
|---|---|---|
| Hanarl | GEM1041 | refer to "9.3 FRONT PANEL SECTION" |

## ■ Cleaning

Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

| Position to be cleaned | Cleaning tools |
|---|---|
| Pickup lenses | Cleaning liquid : GEM1004<br>Cleaning paper : GED-008 |

| Position to be cleaned | Cleaning tools |
|---|---|
| Fans | Cleaning paper : GED-008 |

A

B

C

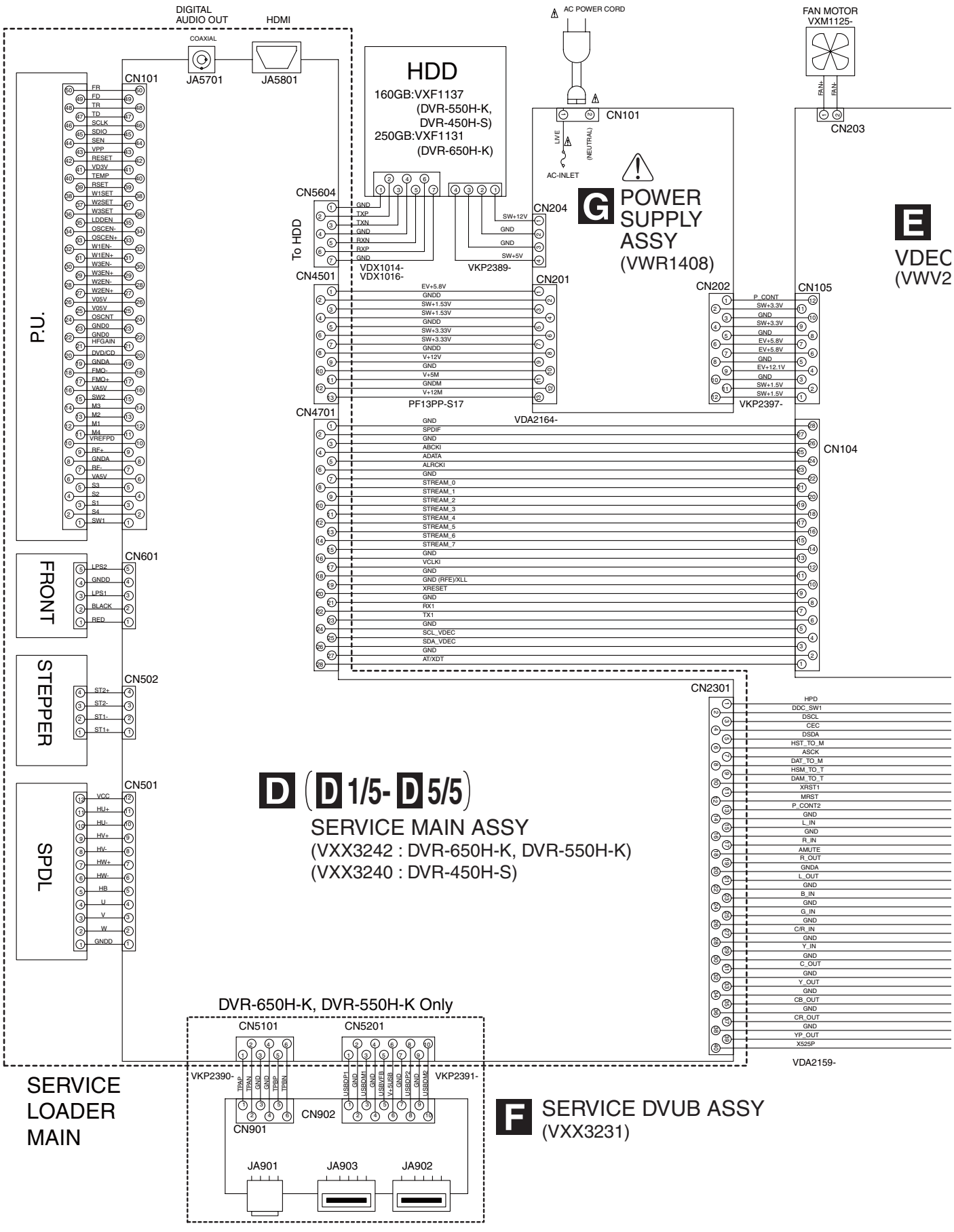
D

E

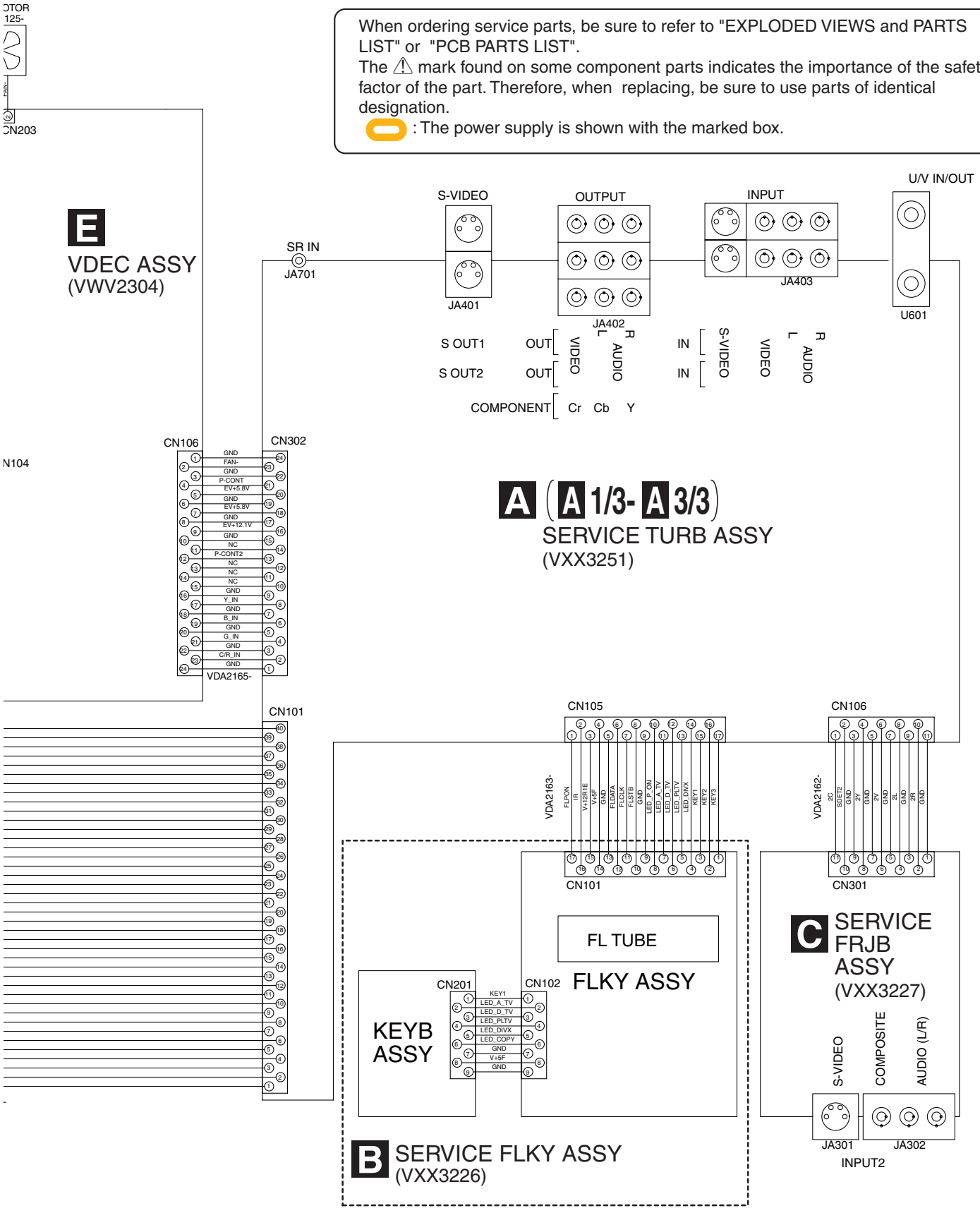
F

# 4. BLOCK DIAGRAM

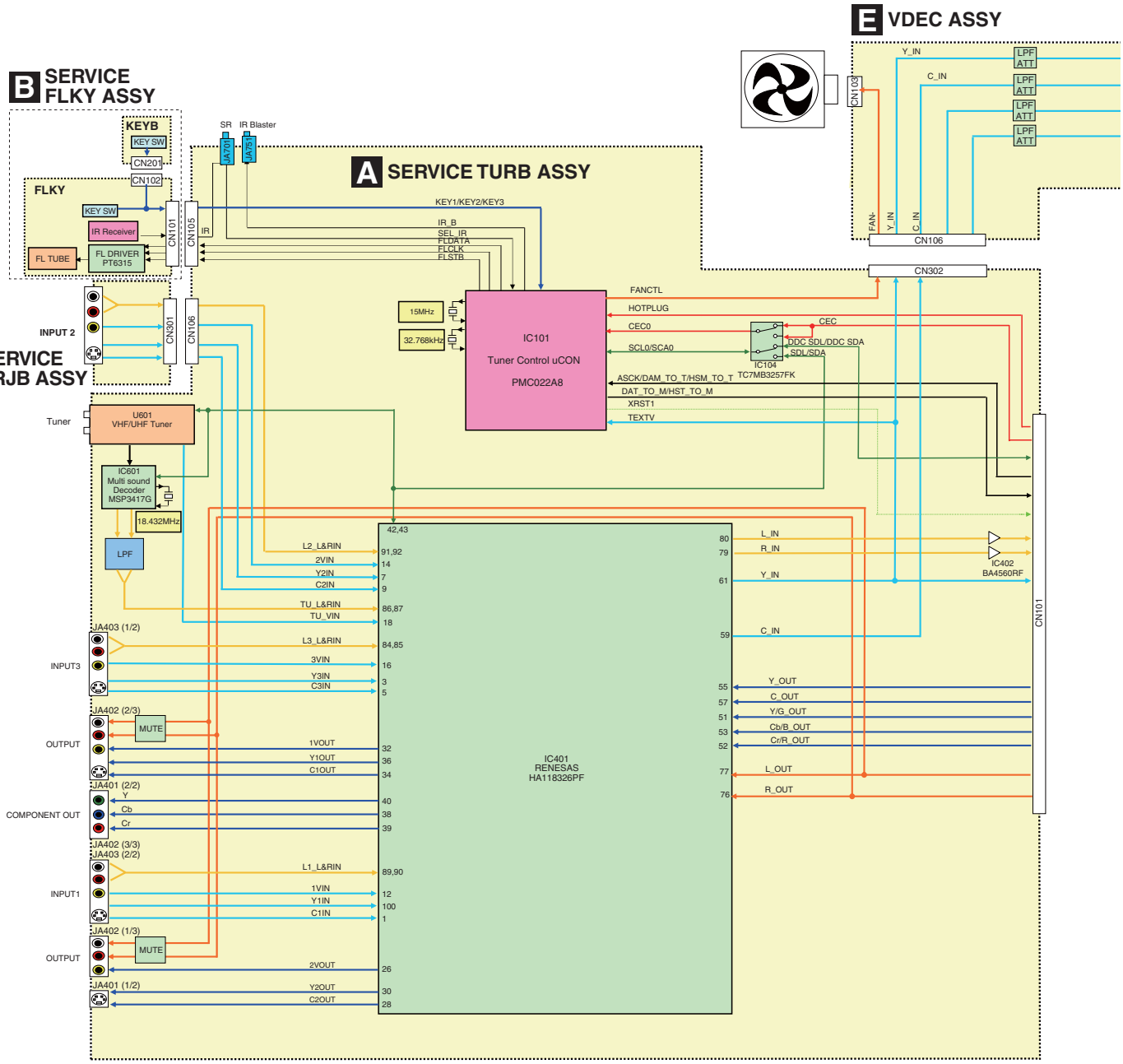
## 4.1 OVERALL WIRING DIAGRAM

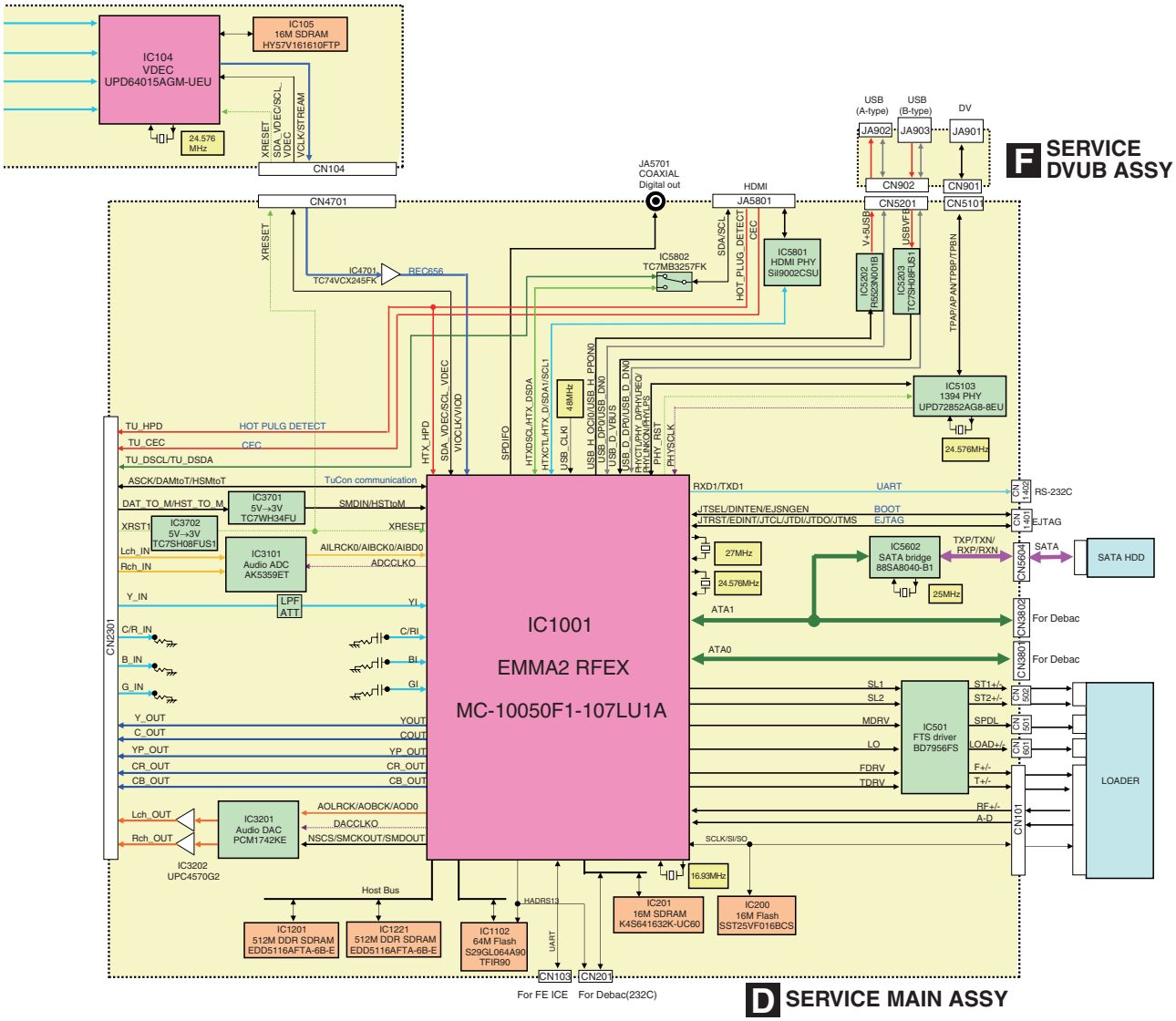


When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
: The power supply is shown with the marked box.

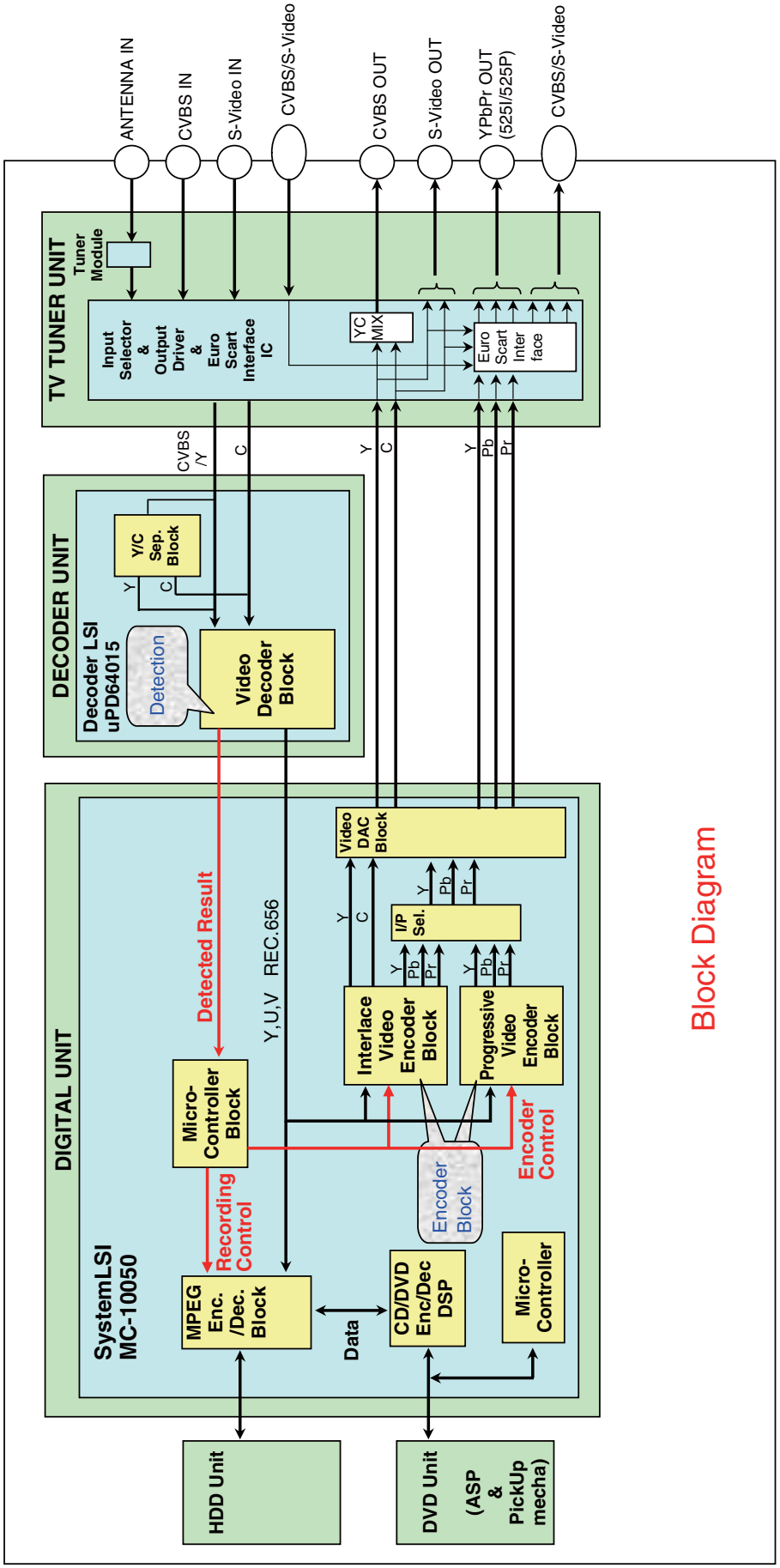


# 4.2 OVERALL BLOCK DIAGRAM

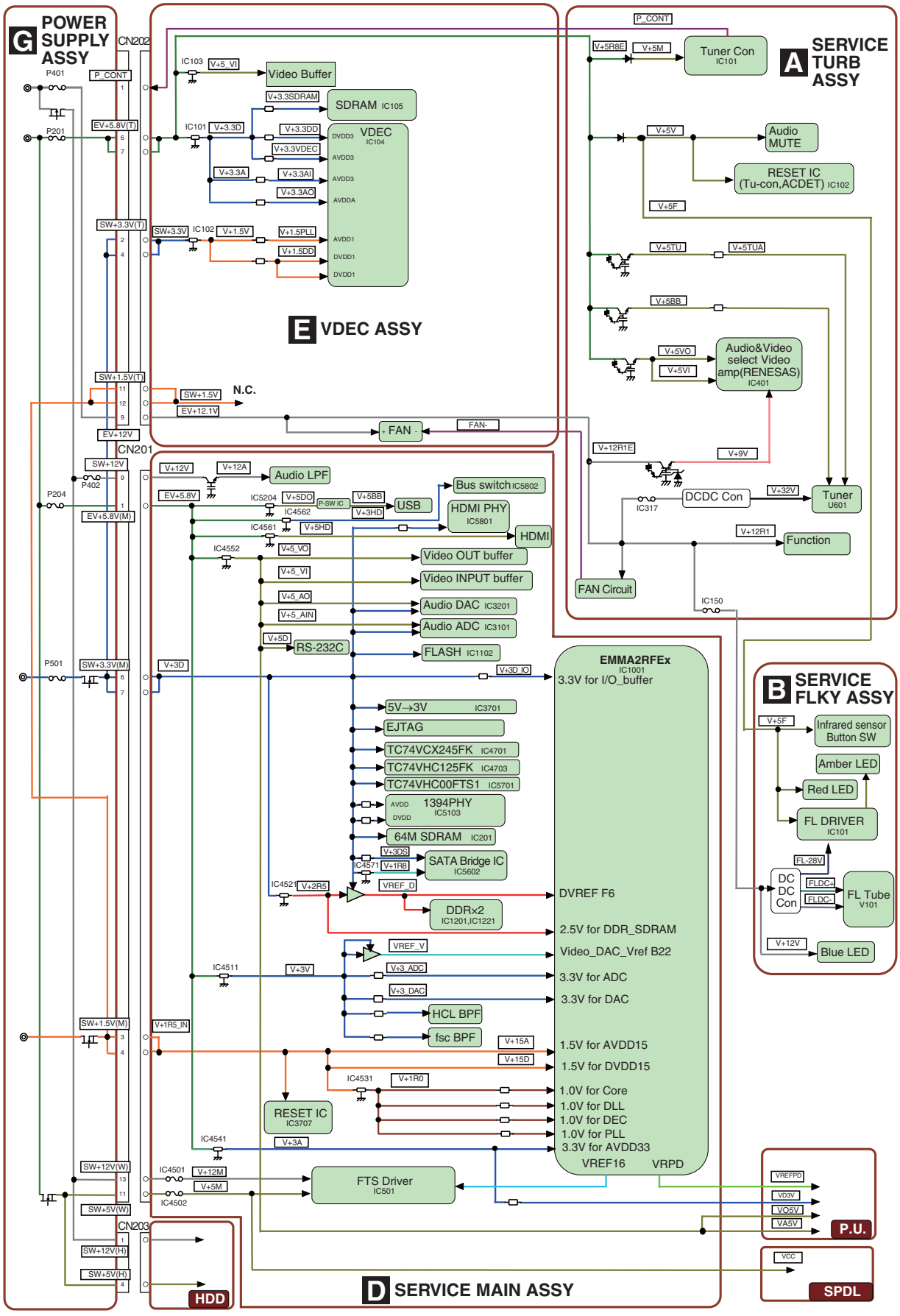



IC104
VDEC
UPD64015AGM-UEU
IC105
16M SDRAM
HY57V161610FTP
24.576 MHz
XRESET
SDA_VDEC/SCL_VDEC
VCLK/STREAM
CN104
F SERVICE DVUB ASSY
USB (A-type)
USB (B-type)
DV
JA902
JA903
JA901
CN902
CN901
CN5201
CN5101
JA5701
COAXIAL
Digital out
HDMI
JA5801
CN4701
IC5802
TC7MB3257FK
IC4701
TC74VCX245FK
REC656
IC5801
HDMI PHY
SII9002CSU
IC5202
R5523N001B
IC5203
TC7SH08FUS1
IC5103
1394 PHY
UPD72852AG8-8EU
24.576MHz
TU_HPD
HOT PULG DETECT
TU_CEC
CEC
TU_DSCL/TU_DSDA
ASCK/DAMtoT/HSMtoT
TuCon communication
DAT_TO_M/HST_TO_M
IC3701
5V→3V
TC7WH34FU
SMDIN/HSTtoM
XRST1
IC3702
5V→3V
TC7SH08FUS1
XRESET
Lch_IN
Rch_IN
IC3101
Audio ADC
AK5359ET
AILRCK0/AIBCK0/AIBD0
ADCCLKO
Y_IN
LPF
ATT
YI
CN2301
C/R_IN
B_IN
G_IN
C/RI
BI
GI
Y_OUT
C_OUT
YP_OUT
CR_OUT
CB_OUT
YOUT
COUT
YP_OUT
CR_OUT
CB_OUT
Lch_OUT
Rch_OUT
IC3202
UPC4570G2
IC3201
Audio DAC
PCM1742KE
AOLRCK/AOBCK/AOD0
DACCLKO
NSCS/SMCKOUT/SMDOUT
IC1001
EMMA2 RFEX
MC-10050F1-107LU1A
HTX_HPD
SDA_VDEC/SCL_VDEC
VICCLK/VICD
SPDIFO
HTXDSCL/HTX_DSDA
HTXCTL/HTX_D/SDA1/SCL1
48MHz
USB_CLKI
USB_H_OPOUT/USB_H_PPON0
USB_D_DP0/USB_D_DN0
USB_D_DP0/USB_D_VBUS
RXCTL/PHY_DPHY/REG/PHY_INKON/HYLPS
PHY_RST
PHYSCLK
RXD1/TXD1
UART
RS-232C
JTSEL/DINTEN/EJSNGEN
JTRST/EDINT/JTCL/JTDI/JTDO/JTMS
BOOT
EJTAG
CN1401
27MHz
24.576MHz
IC5602
SATA bridge
88SA8040-B1
25MHz
TXP/TXN/
RXP/RXN
SATA
CN5602
SATA HDD
ATA1
ATA0
CN3802
CN3801
For Debac
SL1
SL2
MDRV
LO
FDRV
TDRV
IC501
FTS driver
BD7956FS
ST1+/-
ST2+/-
SPDL
LOAD+/-
F+/-
T+/-
RF+/-
A-D
CN101
LOADER
SCLK/SI/SO
16.93MHz
Host Bus
HADRS13
IC1201
512M DDR SDRAM
EDD5116AFTA-6B-E
IC1221
512M DDR SDRAM
EDD5116AFTA-6B-E
IC1102
64M Flash
S29GL064A90
TFIR90
IC201
16M SDRAM
K4S641632K-UC60
IC200
16M Flash
SST25VF016BCS
CN103
CN201
For FE ICE
For Debac(232C)
D SERVICE MAIN ASSY

# 4.3 DETECTION AND ENCODE SYSTEM BLOCK DIAGRAM

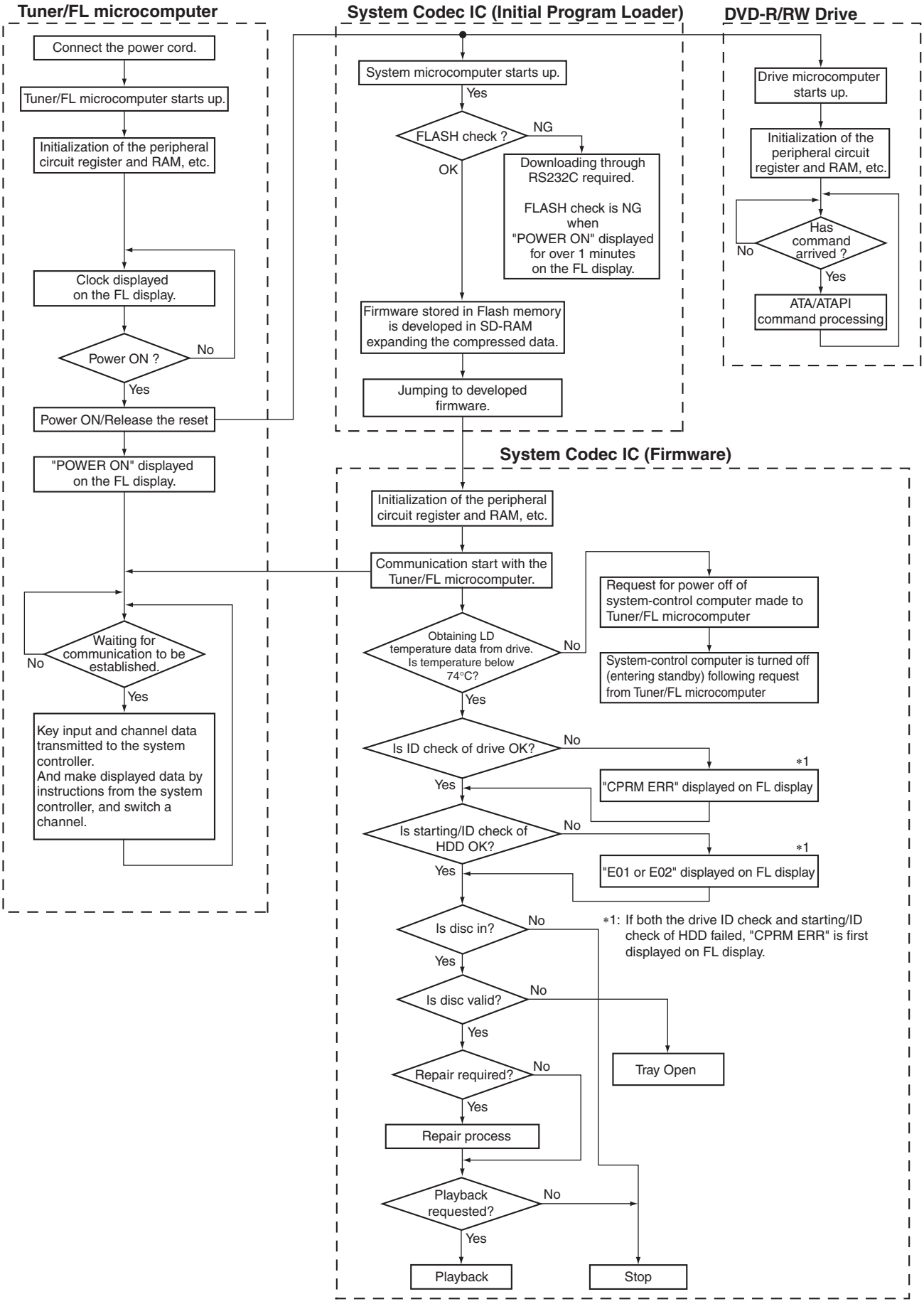


# 4.4 POWER BLOCK DIAGRAM

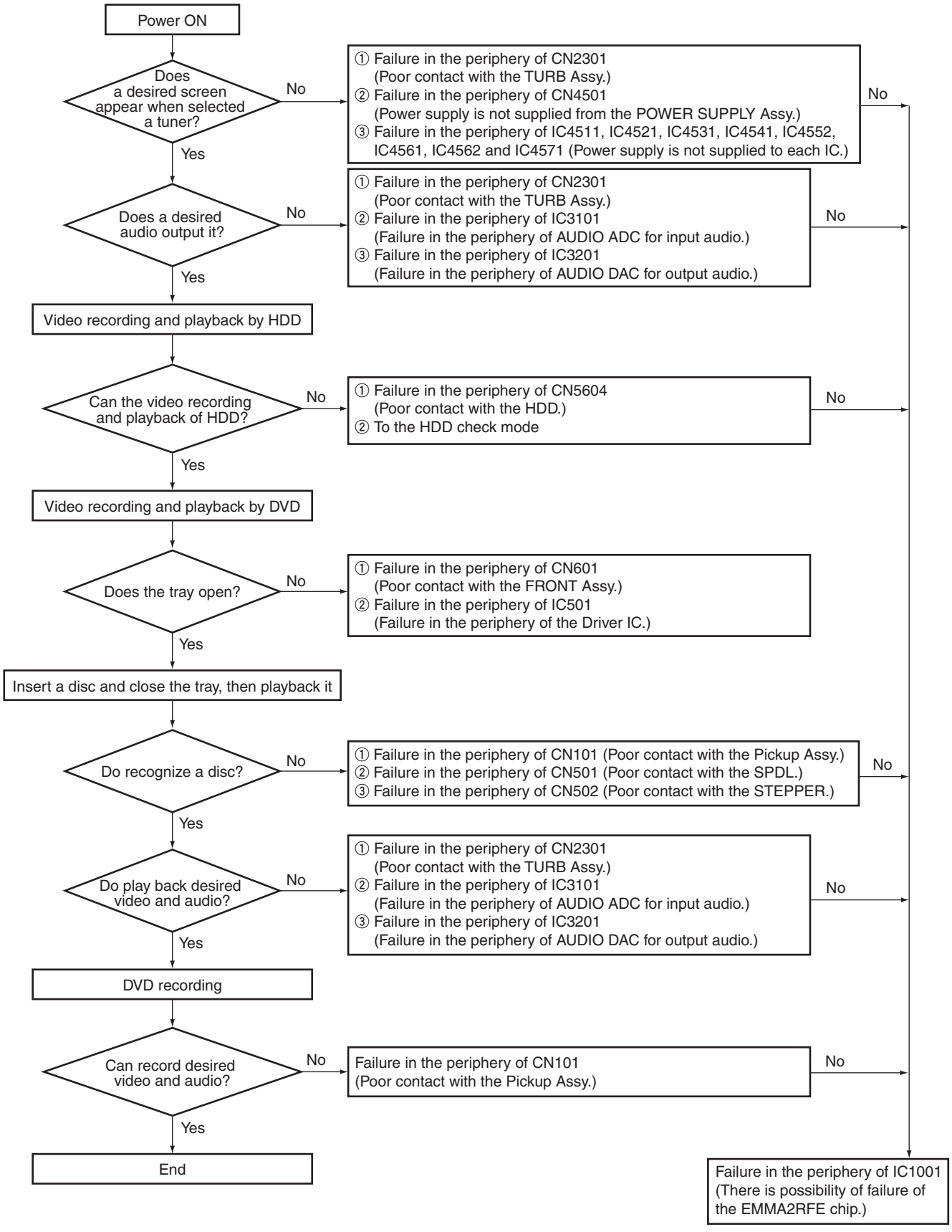


# 5. DIAGNOSIS

## 5.1 SETUP SEQUENCE


Tuner/FL microcomputer
Connect the power cord.
Tuner/FL microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Clock displayed on the FL display.
Power ON ?
No
Yes
Power ON/Release the reset
"POWER ON" displayed on the FL display.
Waiting for communication to be established.
No
Yes
Key input and channel data transmitted to the system controller.
And make displayed data by instructions from the system controller, and switch a channel.
System Codec IC (Initial Program Loader)
System microcomputer starts up.
Yes
FLASH check ?
NG
OK
Downloading through RS232C required.
FLASH check is NG when "POWER ON" displayed for over 1 minutes on the FL display.
Firmware stored in Flash memory is developed in SD-RAM expanding the compressed data.
Jumping to developed firmware.
DVD-R/RW Drive
Drive microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Has command arrived ?
No
Yes
ATA/ATAPI command processing
System Codec IC (Firmware)
Initialization of the peripheral circuit register and RAM, etc.
Communication start with the Tuner/FL microcomputer.
Obtaining LD temperature data from drive. Is temperature below 74°C?
No
Yes
Request for power off of system-control computer made to Tuner/FL microcomputer
System-control computer is turned off (entering standby) following request from Tuner/FL microcomputer
Is ID check of drive OK?
No
Yes
*1
"CPRM ERR" displayed on FL display
Is starting/ID check of HDD OK?
No
Yes
*1
"E01 or E02" displayed on FL display
Is disc in?
No
Yes
Is disc valid?
No
Yes
Tray Open
Repair required?
No
Yes
Repair process
Playback requested?
No
Yes
Playback
Stop
*1: If both the drive ID check and starting/ID check of HDD failed, "CPRM ERR" is first displayed on FL display.

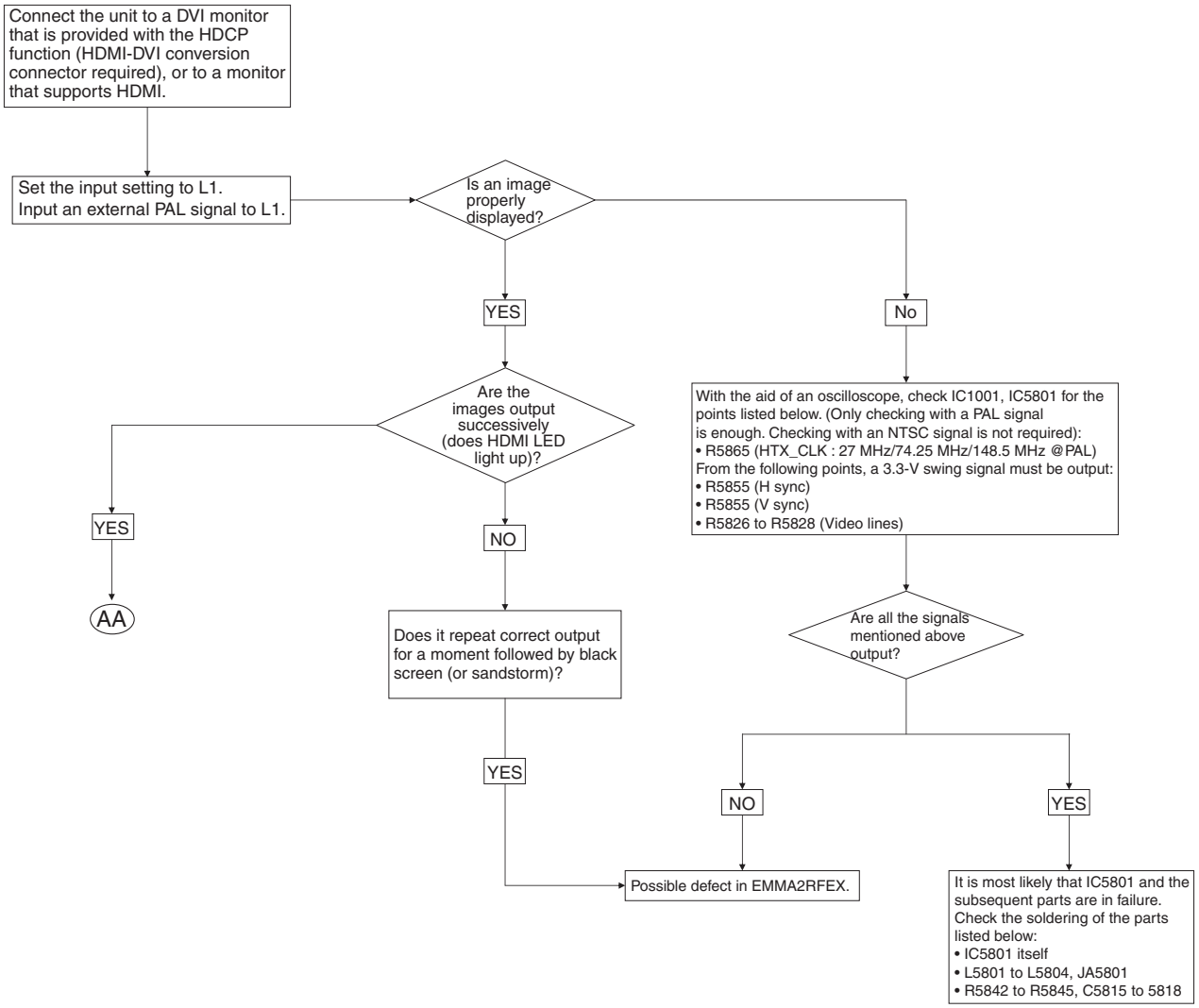
# 5.2 DIAGNOSIS OF THE MAIN ASSY

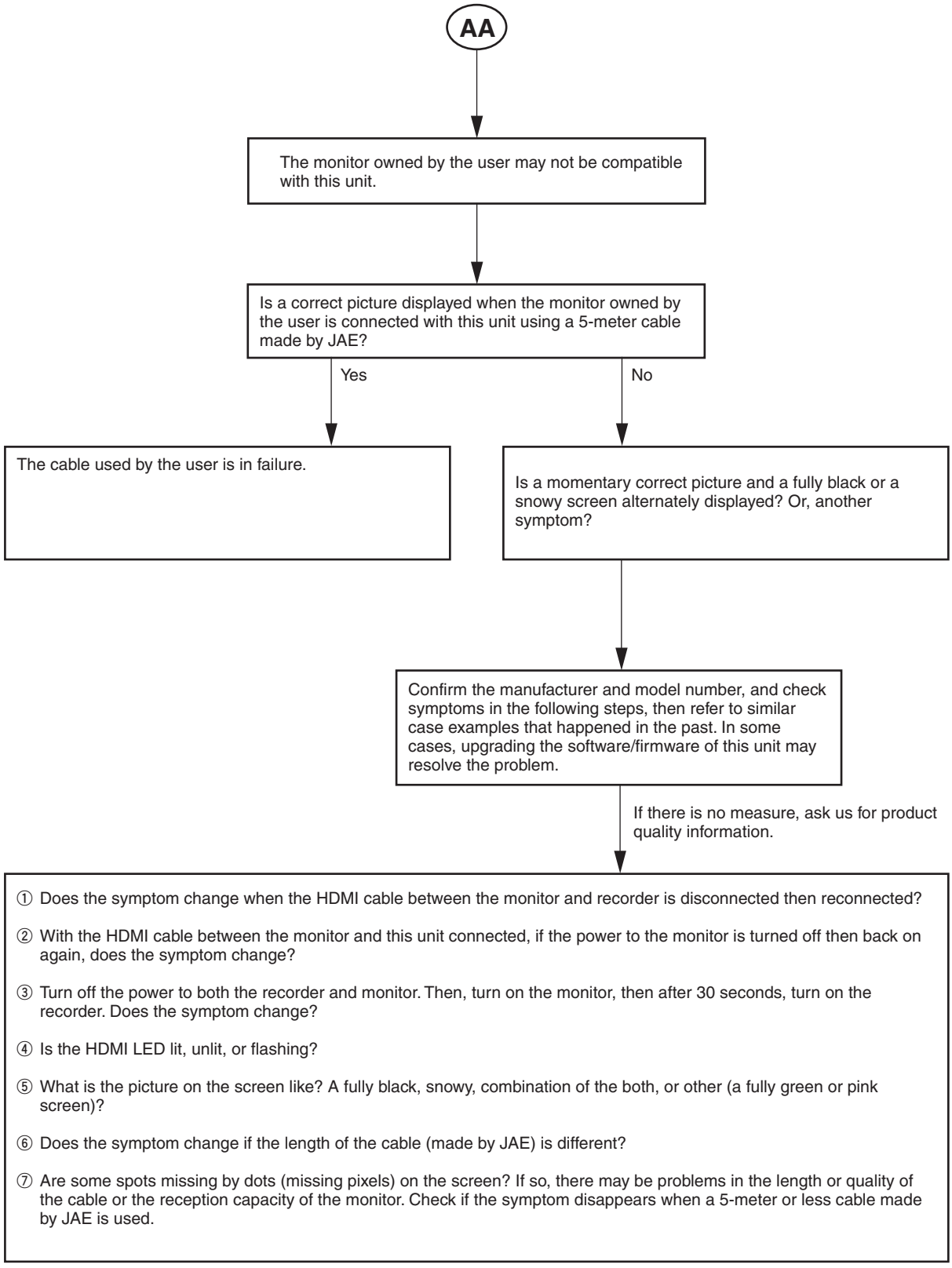

Power ON
Does a desired screen appear when selected a tuner?
No
① Failure in the periphery of CN2301 (Poor contact with the TURB Assy.)
② Failure in the periphery of CN4501 (Power supply is not supplied from the POWER SUPPLY Assy.)
③ Failure in the periphery of IC4511, IC4521, IC4531, IC4541, IC4552, IC4561, IC4562 and IC4571 (Power supply is not supplied to each IC.)
No
Yes
Does a desired audio output it?
No
① Failure in the periphery of CN2301 (Poor contact with the TURB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
No
Yes
Video recording and playback by HDD
Can the video recording and playback of HDD?
No
① Failure in the periphery of CN5604 (Poor contact with the HDD.)
② To the HDD check mode
No
Yes
Video recording and playback by DVD
Does the tray open?
No
① Failure in the periphery of CN601 (Poor contact with the FRONT Assy.)
② Failure in the periphery of IC501 (Failure in the periphery of the Driver IC.)
Yes
Insert a disc and close the tray, then playback it
Do recognize a disc?
No
① Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
② Failure in the periphery of CN501 (Poor contact with the SPDL.)
③ Failure in the periphery of CN502 (Poor contact with the STEPPER.)
No
Yes
Do play back desired video and audio?
No
① Failure in the periphery of CN2301 (Poor contact with the TURB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
No
Yes
DVD recording
Can record desired video and audio?
No
Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
No
Yes
End
Failure in the periphery of IC1001 (There is possibility of failure of the EMMA2RFE chip.)

## ◆ Diagnosis of the HDMI Block

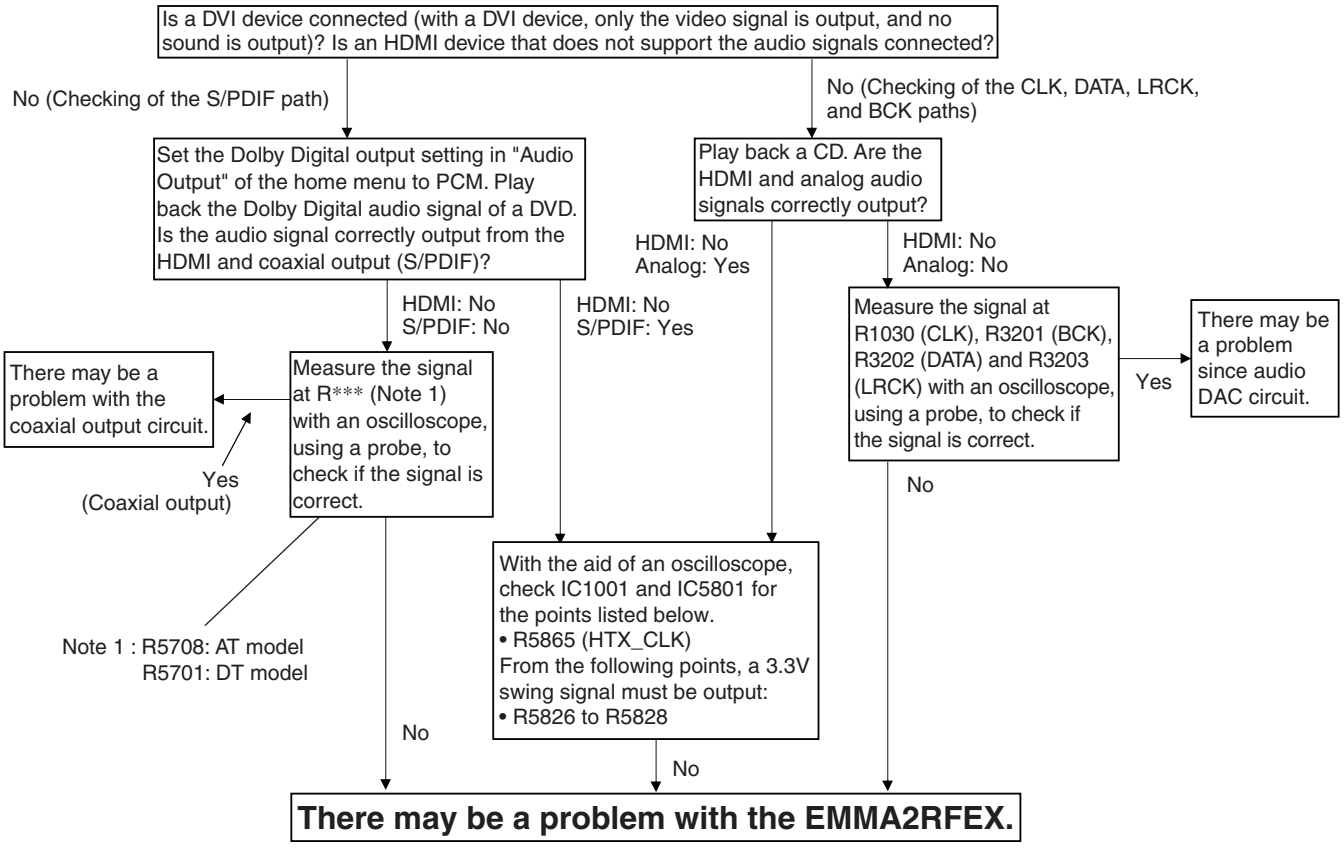
### 1. In a case when only the HDMI video is not outputted

*This flowchart shows how to confirm the output from the HDMI block on the basis that an external input signal to the L1 connector is through-output from the analog output connector properly.


Connect the unit to a DVI monitor that is provided with the HDCP function (HDMI-DVI conversion connector required), or to a monitor that supports HDMI.
Set the input setting to L1.
Input an external PAL signal to L1.
Is an image properly displayed?
YES
No
Are the images output successively (does HDMI LED light up)?
YES
AA
NO
Does it repeat correct output for a moment followed by black screen (or sandstorm)?
YES
Possible defect in EMMA2RFEX.
With the aid of an oscilloscope, check IC1001, IC5801 for the points listed below. (Only checking with a PAL signal is enough. Checking with an NTSC signal is not required):
• R5865 (HTX_CLK : 27 MHz/74.25 MHz/148.5 MHz @PAL)
From the following points, a 3.3-V swing signal must be output:
• R5855 (H sync)
• R5855 (V sync)
• R5826 to R5828 (Video lines)
Are all the signals mentioned above output?
NO
YES
It is most likely that IC5801 and the subsequent parts are in failure.
Check the soldering of the parts listed below:
• IC5801 itself
• L5801 to L5804, JA5801
• R5842 to R5845, C5815 to 5818


AA
The monitor owned by the user may not be compatible with this unit.
Is a correct picture displayed when the monitor owned by the user is connected with this unit using a 5-meter cable made by JAE?
Yes
No
The cable used by the user is in failure.
Is a momentary correct picture and a fully black or a snowy screen alternately displayed? Or, another symptom?
Confirm the manufacturer and model number, and check symptoms in the following steps, then refer to similar case examples that happened in the past. In some cases, upgrading the software/firmware of this unit may resolve the problem.
If there is no measure, ask us for product quality information.
① Does the symptom change when the HDMI cable between the monitor and recorder is disconnected then reconnected?
② With the HDMI cable between the monitor and this unit connected, if the power to the monitor is turned off then back on again, does the symptom change?
③ Turn off the power to both the recorder and monitor. Then, turn on the monitor, then after 30 seconds, turn on the recorder. Does the symptom change?
④ Is the HDMI LED lit, unlit, or flashing?
⑤ What is the picture on the screen like? A fully black, snowy, combination of the both, or other (a fully green or pink screen)?
⑥ Does the symptom change if the length of the cable (made by JAE) is different?
⑦ Are some spots missing by dots (missing pixels) on the screen? If so, there may be problems in the length or quality of the cable or the reception capacity of the monitor. Check if the symptom disappears when a 5-meter or less cable made by JAE is used.

## 2. In a case when only the HDMI audio is not outputted


Is a DVI device connected (with a DVI device, only the video signal is output, and no sound is output)? Is an HDMI device that does not support the audio signals connected?
No (Checking of the S/PDIF path)
No (Checking of the CLK, DATA, LRCK, and BCK paths)
Set the Dolby Digital output setting in "Audio Output" of the home menu to PCM. Play back the Dolby Digital audio signal of a DVD. Is the audio signal correctly output from the HDMI and coaxial output (S/PDIF)?
Play back a CD. Are the HDMI and analog audio signals correctly output?
HDMI: No
Analog: Yes
HDMI: No
Analog: No
HDMI: No
S/PDIF: No
HDMI: No
S/PDIF: Yes
Measure the signal at R1030 (CLK), R3201 (BCK), R3202 (DATA) and R3203 (LRCK) with an oscilloscope, using a probe, to check if the signal is correct.
Yes
There may be a problem since audio DAC circuit.
There may be a problem with the coaxial output circuit.
Measure the signal at R*** (Note 1) with an oscilloscope, using a probe, to check if the signal is correct.
Yes
(Coaxial output)
No
Note 1 : R5708: AT model
R5701: DT model
With the aid of an oscilloscope, check IC1001 and IC5801 for the points listed below.
• R5865 (HTX_CLK)
From the following points, a 3.3V swing signal must be output:
• R5826 to R5828
No
No
There may be a problem with the EMMA2RFEX.

# 6. SERVICE MODE

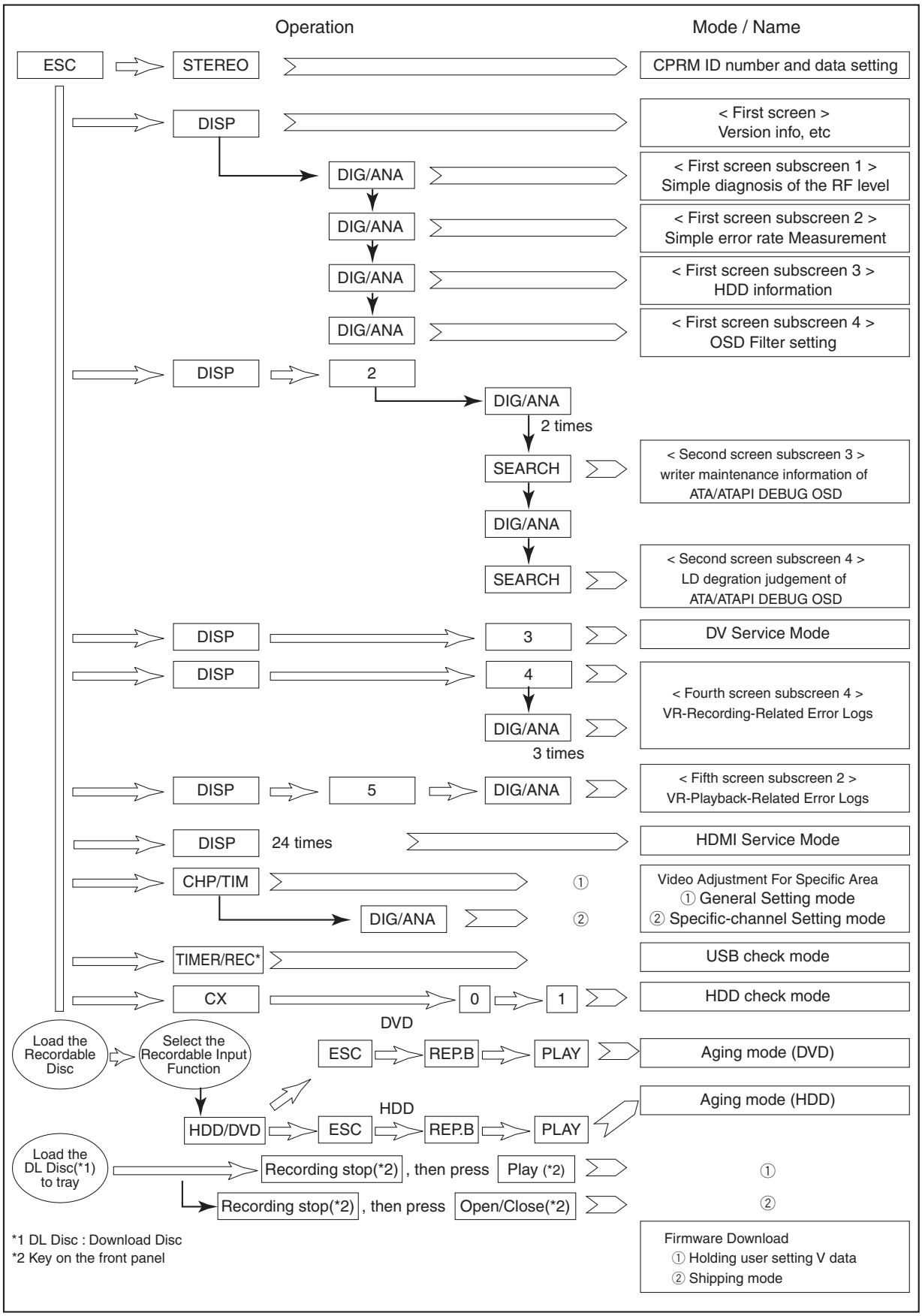
## ◆ Overview and Purposes

To be used to check the status of the product and to collect the information for failure diagnosis.
The following information to be used for servicing is displayed:
[1] First screen : Version, HDD information, etc.
[2] Second screen : ATA/ATAPI debug screen (Writer information)
[4] Fourth screen : VR-recording-related error logs
[5] Fifth screen : VR-playback-related error logs

Each screen has sublevel screens.

**[Note]** After entering any Service mode screen, to shift to another Service mode screen, first quit that Service mode screen then enter another Service mode screen.

## ◆SERVICE MODE MAP

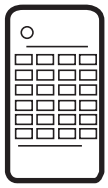


# 6.1 VERSION INFORMATION, ETC. (FIRST SCREEN)

**[Purposes]**

To check the versions of the system control computer, TUNER microcomputer, and firmware for the drive, simple measurement of the RF level for the U/V tuner, results of the simple error rate measurement, HDD information, and OSD Filter setting

**[Tools to be used]**



Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

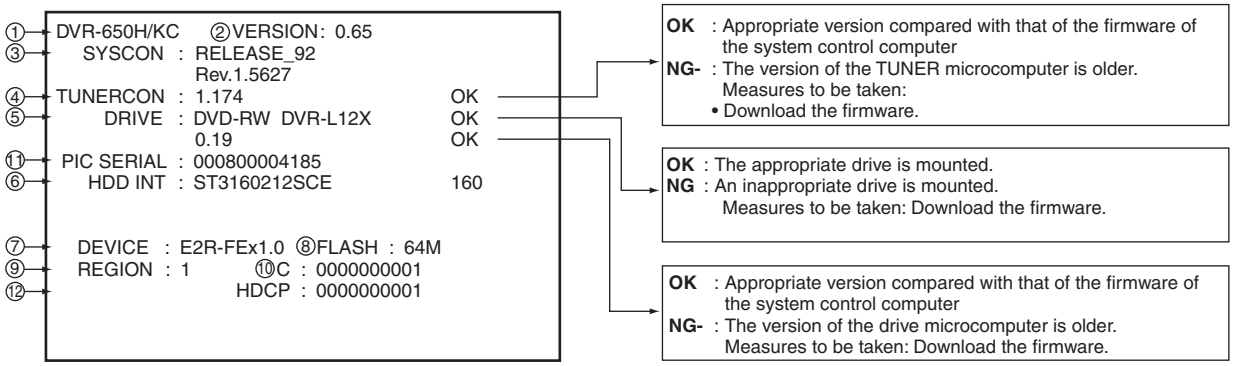
**[How to enter]** While the GUI screen is not displayed, press the ESC then DISP keys.

How to enter and change subscreens of the first screen: While the first screen is displayed, press the DIG/ANA key repeatedly until your desired subscreen is displayed. The subscreens change cyclically.

**[How to quit]** Press the ESC key.

**[Description]**

**(1) First screen**


① DVR-650H/KC ②VERSION: 0.65
③ SYSCON : RELEASE_92
Rev.1.5627
④ TUNERCON : 1.174 OK
⑤ DRIVE : DVD-RW DVR-L12X OK
0.19 OK
⑪ PIC SERIAL : 000800004185
⑥ HDD INT : ST3160212SCE 160
⑦ DEVICE : E2R-FEx1.0 ⑧FLASH : 64M
⑨ REGION : 1 ⑩C : 0000000001
⑫ HDCP : 0000000001
OK : Appropriate version compared with that of the firmware of the system control computer
NG- : The version of the TUNER microcomputer is older.
Measures to be taken:
• Download the firmware.
OK : The appropriate drive is mounted.
NG : An inappropriate drive is mounted.
Measures to be taken: Download the firmware.
OK : Appropriate version compared with that of the firmware of the system control computer
NG- : The version of the drive microcomputer is older.
Measures to be taken: Download the firmware.

① Model name/destination
② Version of the recorder software
③ Revision No. of the system-control computer software
④ Version No. of the tuner microcomputer
Result of the combination ckeck with system u-com
⑤ Information on the built-in drive
(Model name, version No., model type)
⑥ Data of the built-in HDD, capacity of the HDD
⑦ DEVICE information (EMMA type, ES No.)
⑧ FLASH ROM information
⑨ Region No.
⑩ CPRM information (CPRM key No.)
⑪ PICUP SERIAL No.
⑫ HDCP information (HDMI authentication key)
Same number as that for CPRM.

**• Details on HDD data are described below:**

HDD : WDC10234564 # 160

- Capacity of the HDD (unit: Gbytes)
- HDD identification error indication
- Name of manufacturer, part No. by manufacturer

If any abnormality exists in HDD connection, the indications shown in Table 1 below are displayed.

**Table 1: HDD recognition status represented by the HDD data display**

| HDD identification conditions | Example of HDD data to be displayed | Remarks |
|---|---|---|
| Failure in physical identification of HDD (no connection, defective HDD, interface error) | Blank space | • Check the connection to the SATA connector.<br>• Replace the SATA flexible cable and connector.<br>• Replace the HDD.<br>• Replace the resistor in the SATA communication line. |
| Physical identification of HDD possible, but not identified (CPRM ID is not input.) | WDC 10234564 # 160 | • Input the CPRM ID. |
| Physical identification of HDD possible, HDD identified, but failure in logical formatting | WDC 10234564 ! 160 | "!" represents an HDD-recognition error.<br>• Initialize the HDD or erase all titles. |
| Physical identification of HDD possible, HDD identified, and correct logical formatting (HDD correctly identified) | WDC 10234564 160 | |

If an error indication in the HDD data does not disappear even after the above measures were taken, refer to another sheet of "HDD Service Mode."

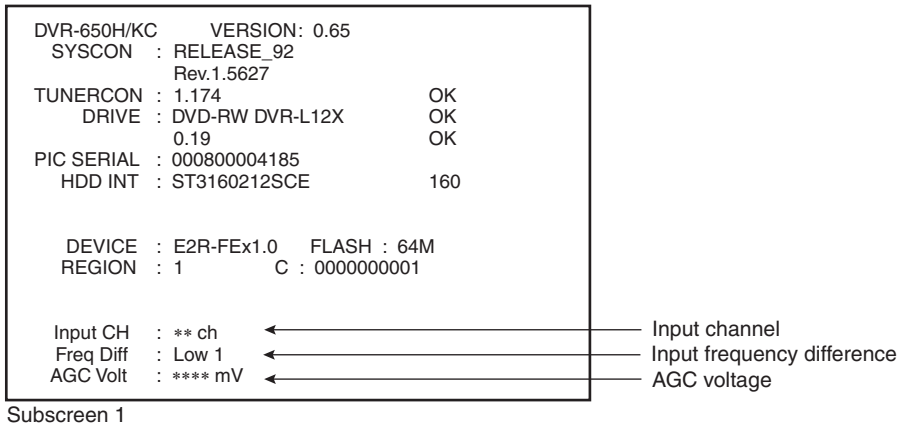
## ◆ Simple Diagnosis of the RF Level (Subscreen 1)

**[Purposes]** To check the RF signal of the U/V tuner by checking the input frequency difference and AGC voltage in this debug mode

**[How to enter]** While the User Setting display is displayed, press the ESC, DISP, then DIG/ANA keys, in that order.

**[How to quit]** Press the ESC key.

**[Description]**




Subscreen 1

**1) Frequency Difference (Freq Diff)**

How much tuning is off is monitored, as shown below:

| Input Frequency | Display |
|---|---|
| Faraway | High 7 |
| High (within 200kHz) | High 1~5 |
| Just Tune | Center |
| Low (within 200kHz) | Low 1~5 |
| Low (over 200kHz) | Low 7 |

**2) AGC voltage (AGC Volt)**

The gain controlled by the tuner is monitored to infer the input electric field intensity.
(The accuracy of inference differs depending on the product.)

| | Field Intensity | AGC VOL |
|---|---|---|
| Intense field area (Clear image) | 70 dBμ or more | 3300 mV or more |
| Less intense field area (Noise may be generated.) | 50 dBμ or more 70 dBμ or less | 3100 - 3300 mV |
| Weak field area (Much noise. EPG/VPS/PDC sometimes cannot be obtained.) | 30 dBμ or more 50 dBμ or less | 2600 - 3100 mV |
| Very weak field area (Image damaged. EPG/VPS/PDC cannot be obtained.) | 30 dBμ or less | 2600 mV or less (It is unable to discriminate.) |

**Tips:**

For good reception, the field intensity must be 50 dBμ or more (AGC Volt 3100 mV or more).
For accurate measurement, use a field intensity meter.

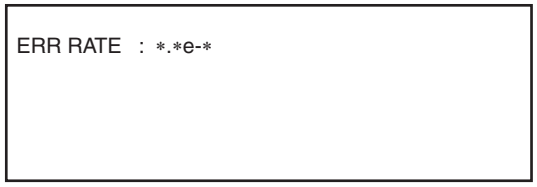
## ◆Simple Error Rate Measurement (Subscreen 2)

**[How to enter]**
- While the User Operation screen is displayed, press the [ESC] then [DISP] keys, then the [DIG/ANA] key twice, in that order.
- While subscreen 1 of the first screen is displayed, press the [DIG/ANA] key.

**[How to quit]** Press the [ESC] key.

**[Measurement procedures]**

① Display subscreen 2.
② Load the Test disc (GGV1025).
③ Judge the results of the error rate measurement by referring to Table 1.



Subscreen 2

**[Tips]**

During VR mode playback, the average value of the past 10 VOBUs is displayed. During DVD-Video or Video mode playback, the average value of the past 256 sectors is displayed.
During VR mode playback, the speed ratio of the drive (/: normal, no indication: double speed) is also displayed.

Table 1: Thresholds when determining OK or Error

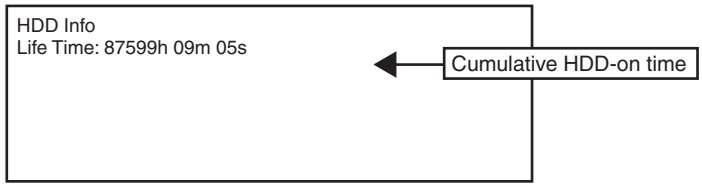
| Disc type | Recording mode | Finalized or not finalized | Reference value |
|---|---|---|---|
| DVD-VIDEO | – | – | $8.0\times10^{-4}$ |
| DVD-R | Video mode | Finalized | $1.0\times10^{-3}$ |
| | | Not finalized | $1.0\times10^{-3}$ |
| DVD-RW | Video mode | Finalized | $1.0\times10^{-3}$ |
| | | Not finalized | $1.0\times10^{-3}$ |

## ◆HDD Information (Subscreen 3)

**[How to enter]**
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key three times, in that order.
- While subscreen 2 of the first screen is displayed, press the DIG/ANA key.

**[How to quit]** Press the ESC key.

**[Mode description]**




Subscreen 3

**[Tips]**

- **How the data on cumulative HDD-on time are processed in memory**

  Storage place:
  FLASH ROM

  Timing of referring to the data on cumulative HDD-on time:
  When the power is turned on, fails, the FLASH ROM is referred to.

  Timing of updating the data on cumulative HDD-on time:
  While the HDD is on, the data on cumulative HDD-on time in the RAM is updated every 3 seconds, and every time updating is executed the data are stored in the Backup SRAM. When the power is turned off, the data are stored in the FLASH ROM.

- **How to clear the data on cumulative HDD-on time**

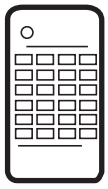
  FLASH ROM:
  When the HDD Identification Setting is performed, the data on cumulative HDD-on time are automatically cleared. The HDD Identification Setting is automatically performed when the CPRM setting is performed on the CPRM setting screen (to display the CPRM setting screen, press the ESC then the STEREO keys).

  **Notes:**
  - The data on cumulative HDD-on time are not cleared when resetting to factory-preset values is performed.
  - The data on cumulative HDD-on time are not cleared when the system-control computer software is downloaded.

## ◆ OSD Filter Setting (Subscreen 4)

**[Purpose]** Depending on the monitor used, the character flicker on the OSD may stand out.
If a system, such as character flicker, appears on the monitor, select the filter response.

**[Tools to be used]**



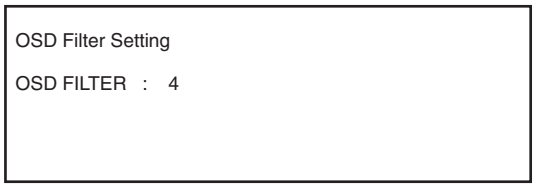
Remote control unit for servicing
(GGF1381)

**[How to enter]**
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key four times, in that order.
- While subscreen 3 of the first screen is displayed, press the DIG/ANA key.

**[How to quit]** Press the ESC key.

**[Setting procedures]**

① Display subscreen 4.
② Select the setting from the key operation table.




Subscreen 4

**[Tips]**

As the setting value becomes greater, jitter is reduced on a CRT display. However, as lines for characters appear thick, complex characters may become difficult to read. On the contrary, as the setting value becomes smaller, jitter increases on a CRT display. However, as lines for characters become sharper, complex characters become more legible.

Note: Use the remote control unit for servicing.
Note: A new setting becomes active as soon as it is made. As a new setting is stored in nonvolatile memory, it will be retrieved when the unit it turned on the next time.
Note: After the factory-preset values are downloaded, the setting value for the OSD Filter will be the default value (4).

**[(Table 2) Key operation of OSD Filter setting]**

| Key | Operation | Setting value | Remarks |
|---|---|---|---|
| [ Rev x 3 ], [SPEED+]<br>[ x 3 Fwd], [SPEED-] | Changing the setting value for the OSD Filter | 0 - 4 (Default value: 4) | [ Rev x 3 ], [SPEED+]<br>: The setting value increases by 1.<br>[ x 3 Fwd ], [SPEED-]<br>: The setting value decreases by 1. |
| [CLEAR] | The setting value is reset to default. | – | |
| [ESC] | To exit the OSD Filter Setting and clear the screen (Appears the tuner screen.) | – | – |

# 6.2 ATA/ATAPI DEBUG SCREEN (SECOND SCREEN)

**[Purposes]**

To be used as a rough guide to judge whether the pickup unit is all right or not

- Dirt on the pickup lens
- Degradation of the laser diodes for reading CDs and reading/writing to/from DVDs

**[Tools to be used]**

Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

**[How to enter]**

- While the User Operation display is displayed, press the ESC, DISP, then 2 keys, in that order.
- While any subscreen of the second screen is displayed, press the DIG/ANA key repeatedly. The subscreens change cyclically.

**[How to quit]** Press the ESC key.

## ◆Writer Maintenance Information of ATA/ATAPI DEBUG OSD (Subscreen 3)

**[How to enter]**

- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key twice, in that order.

**[How to quit]** Press the ESC key.

**[Procedures]** Update the display by pressing the SEARCH key while subscreen 3 is displayed.

```
ATA/ATAPI  Writer MaintenanceInfo
① Power ON      00 00 00 0000 00000000
  0102:56       01 00 00 0000 00000000
  DVD           02 00 00 0000 00000000
② R0053:48      03 00 00 0000 00000000
③ W0022:16      04 00 00 0000 00000000
  CD            05 00 00 0000 00000000
④ R0034:04      06 00 00 0000 00000000
⑤ W0000:00      07 00 00 0000 00000000
                                  00-00
```

Error log for the Writer (Not for Service)

① Power-on time/cumulative power-on time
② Duration of emission of the laser diode (LD) for DVD-R/DVD while reading
③ Duration of emission of the LD for DVD-W/DVD while writing
④ Duration of emission of the LD for CD-R/CD while reading
⑤ Duration of emission of the LD for CD-W/CD while writing (This function is not used for this model.)

② If the total hours of duration of emission of the laser diode (LD) for DVDs while reading ② and that of emission of the LD for DVDs while writing ③ exceed 4,700 hours, the LDs may be degraded. Perform an LD degradation judgment, using subscreen 4.

**[Tips]**

MTTF hours for each LD
DVD: 4,700 hours
CD: 11,000 hours
The ATA/ATAPI Writer Maintenance Info is obtained each time the power is turned on. Thereafter, the data on the subscreen is updated each time the SEARCH key is pressed (the updating command is sent) while this subscreen is displayed. Care must be taken when updating this subscreen, because an undesired command is inserted if it is executed while recording, etc.
[Note on lighting time data for each LD]
Since data on lighting time of each laser diode (LD) are stored in the flash ROM on the MAIN Assy, after the MAIN Assy is replaced, the data will be cleared. However, after the LOADER Assy is replaced, data on lighting time of each LD will be retained in the MAIN Assy. Therefore, before either the MAIN Assy or LOADER Assy is to be replaced, it is recommended that you write down the lighting time data.

## ◆ LD Degration Judgment of ATA/ATAPI DEBUG OSD (Subscreen 4)

**[How to enter]**
- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key three times, in that order.

**[How to quit]** Press the ESC key.

**[Notes]**
- For correct measurement of items ① to ④ indicated in the display below, leave the unit at room temperature (25˚C) for a while before turning it on, and do not load a disc.
- For RF measurement (item ⑤), it is recommended to use the Test disc (GGV1025).
  As the RF level differs depending on the characteristics of the pickup from product to product, it cannot be used for judging degradation of the LD. Use the RF level as a rough guide to know the difference between before and after lens cleaning.

**[Procedures]** To update the value for each item, press the SEARCH key while subscreen 4 is displayed.
For details on each item and the conditions of updating the values, see Table 2 below.

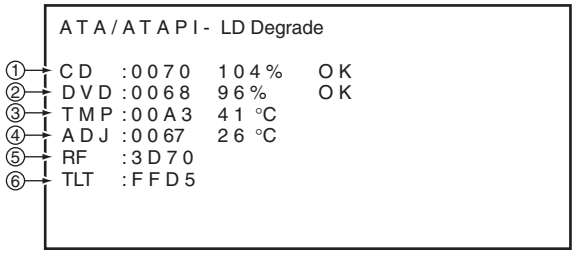



**Table 2: Description of each item and conditions for updating data**

| No. | Item | Description | Conditions for updating by pressing the SEARCH key |
|---|---|---|---|
| ① | CD | Degradation judgment of LD for CD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive) | No disc inserted in the disc tray |
| ② | DVD | Degradation judgment of LD for DVD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive) | No disc inserted in the disc tray |
| ③ | TMP | Current temperature inside the Writer | No disc inserted in the disc tray |
| ④ | ADJ | Temperature (approx. 25°C) inside the Writer during adjustment | No disc inserted in the disc tray |
| ⑤ | RF | RF level (16-bit data, proportional calculation performed using the actual RF level value with 2.5 V = 0xFFFF as the maximum value, displayed in 4-digit hexadecimal) | During playback of disc medium (GGV1025) |
| ⑥ | TLT | Writer adjustment data for straight (non-HDD) model (FFFF is diplayed when the writer is not adjusted.) | No condition |

If the results of degradation of the LDs for CDs or DVDs are NG, replace the drive.

# 6.3 VR-RECORDING-RELATED ERROR LOGS (FOURTH SCREEN)

**[Purposes]**

To roughly determine in which category shown below a symptom that is difficult to reproduce belongs.
For details on the categories of error logs displayed, see "Table 1: Description of VR-recording-related errors."

- Errors related to the MPEG Encoder
- Errors related to the drive system
- Errors related to copying
- Errors related to others
- Errors related to the HDD

**[Tool to be used]**

Remote control unit for servicing
(GGF1381)

**[How to enter]**

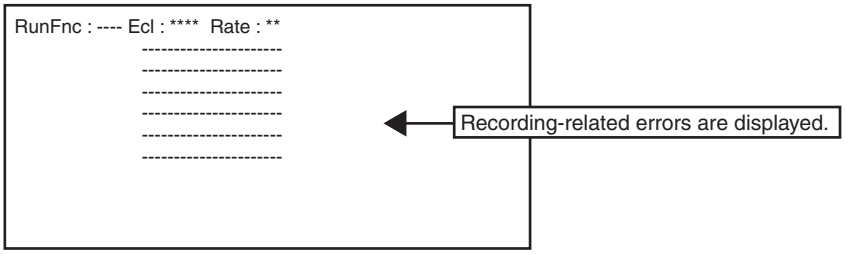
- While the User Operation display is displayed, press the ESC, DISP, then 4 keys, in that order.
- While any subscreen of the fourth screen is displayed, press the DIG/ANA key repeatedly.
  The subscreens change cyclically.

**[How to quit]** Press the ESC key.

**[Description of each subscreen]**

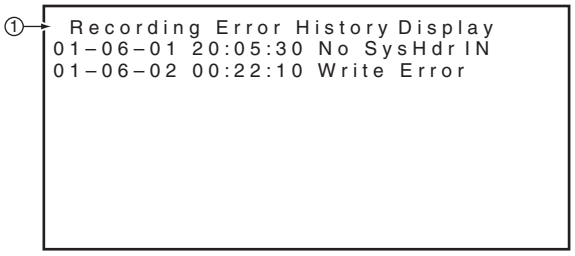
**(1) VR-Recording-Related Error Logs (Subscreen 1)**

- Errors related to recording are displayed on the lines "Rec Err:," as shown below.
  For details on errors, see "Table 1: Description of VR-recording-related errors."




**(2) Subscreen 2 and 3** (These subscreens are not for service use.)

**(3) VR-Recording-Related Error Logs (Subscreen 4)**




① There are two error-log screens, on which up to 9 logs per screen are displayed.
(generation time [year-month-day, hour:minute:second], error data in simplified description)

**[Tips]**

- The two error-log screens can be switched by pressing the SPEED+ or SPEED- key.
- For details on error messages, see Table 1 "Description of VR-recording-related errors".

**(4) Subscreen 5 to 12** (These subscreens are not for service use.)

## ◆ Description of VR-Recording-Related Errors

Any error message marked with ∗ is displayed "RecErr : ---------" on the Subscreen 1 of the fourth screen.

### ● Error Related to MPEG Encoder

| Error Message | Description |
|---|---|
| AVEnc Hang | AVEncoder failed |
| IN Encode ∗ | Changes cannot be made in the process of encoding |
| No SysHdr IN | System packet is not input periodically |
| Stm Start NG | Failure to start encoding (reasons not clear) |
| Stream NG | Inappropriate input stream data |
| Strm Start NG | Timeout waiting for system packet input at the beginning |

### ● Error Related to Drive System

In a case of an error in the drive system, scratches or dirt on a disc, or a problem of the drive itself (dirty pickup) may be suspected.

| Error Message | Description |
|---|---|
| Bdr Cls NG | Close Border failed |
| Bdr Opn NG | Open Border failed |
| BUF Overflow | Overflow of the Stream Buffer |
| CLS Rzon Fail | Video Mode Close Rzone failure |
| Drive Hang | The Drive is hung up. |
| Drv Err | General error of the drive |
| Drv Hard Err | Abnormality in the drive hardware or firmware |
| Drv TimeOut | Timeout waiting for drive operation |
| Fail Repair | Repair failed |
| Format NG | Format failed |
| May Be V mode | Although TMP_VMGI is not written, it may be Video Mode disc. |
| Mech No Res | No response from the mechanical-control computer |
| MKB Invalid | MKB reading error |
| NWA Exhaust | NWA surpassed and impossible to use |
| OPC NG | OPC failed |
| PCA Full | PCA has been used up. |
| Read Err | Reading failed, ECC failed, etc. |
| ReadOnly DISC ∗ | Because some data are invalid, data cannot be written |
| RMA Full | RMA has been used up. |
| Rzn Cls NG | Close RZone failed |
| Rzn Rpr NG | Repair RZone failed |
| Rzn Rsv NG | Reserve RZone failed |
| TMP-VMG WrErr | Video Mode TMP VMGI Write Error |
| VTSI_B Wr Err | Video Mode VTSI BUP Write Error |
| VTSI_B2 Wr Err | Video Mode VTSI BUP Write Error (After Layer Change) |
| VTSI Wr Err | Video Mode VTSI Write Error |
| VTSI2 Wr Err | Video Mode VTSI Write Error (After Layer Change) |
| Write Err | The Drive failed to write and could not be recovered. |
| May Be PVR | May be +VR disc, but no RSAT |
| V Final fail | Abnormal process occurred when finalizing Video mode |
| DLVR trace NG | Close Rzone failed at dual layer disc |

RSAT : Reserved Space Allocation Table

### ● Error Related to Dubbing

| Error Message | Description |
|---|---|
| H2D CP SomeNG | Other NG HDD →DVD copy |
| Mem get NG | Video Mode Copy Memory has not ensured. |
| Strm TransfNG | Video Mode Copy Stream Transfer NG |
| Tracon Trn NG | Video Mode Copy Tracon transfer has not been completed. |
| VC Cell Max | Maximum number for Video Mode copy Cells exceeded |
| VC CopyCancel | Video Mode Copy Copy Cancel |
| VC FlushC NG | Video Mode Copy Flush Cache NG |
| VC HDD C Err | Obtaining Video Mode Copy HDD Cell information failed |
| VC HDD Inf NG | No information on Video Mode Copy HDD |
| VC HDD Info NG | Format failed |
| VC Idling NG | Video Mode Copy idling NG |
| VC Pck Anl NG | Analizing Video Mode Copy Pack failed |

## ● Error Related to Dubbing (Continued)

| Error Message | Description |
|---|---|
| VC Transf Stp | Video Mode Copy Transfer Stop |
| VC TSO BLK NG | Video Mode Copy TSO Block transfer has not been completed. |
| VC VOBU SizeE | Video Mode Copy VOBU Size NG |
| V Rsv RzoneNG | Video Mode Copy Reserve Rzone failed |
| V2H APP FL NG | VR → HDD APP FLG is OFF |
| V2H Aud Ch NG | VR →HDD Audio Channel NG |
| V2H Aud Md NG | VR →HDD Audio Mode NG |
| V2H Aud Stm N | VR →HDD Audio Stream number NG |
| V2H SRC Prot | VR →HDD copy prohibited material |
| V2H Unknown | VR →HDD other NG |
| V2H VOBU TMNG | VR →HDD Play back time of each VOBU is different |
| V2H V Reso NG | VR →HDD Video resolution NG |
| H2D CP NoSpac | HDD →DVD insufficient free space for copy |
| H2D TO HDDRD | HDD →DVD (VR) TimeOut at HDD playing side |
| H2D TO SPRO | HDD →DVD (VR) TimeOut at internal processing |
| H2D TO DVDWR | HDD →DVD (VR) TimeOut at HDD recording side |

## ● Other Errors

| Error Message | Description |
|---|---|
| Abort * | Cancellation |
| Already open | Extension file is already opened. |
| BK BATT Down | Backup RAM data has been erased. |
| BK FSYS Dirty | Backup RAM data has not been written on the File Sys. |
| BUG | Some bugs |
| BusReset Done | Bus Reset has been executed. |
| Cell Close NG | Cell Close NG |
| CPRM IC NG | Inappropriate CPRM IC |
| Dir Depth Err | Tree of Directory is too deep. |
| Disc Full | No further data can be written because the disc is full. |
| DRAM CLR Err | Video Mode DRAM (Stream Buffer) Clear failure |
| DRAM NG | Abnormality in access to the Work DRAM |
| Drive Destroy | The drive has crashed. |
| EncModul Hang | Encoder routine is hung up. |
| F Alrdy Exst | Extension file is already exist. |
| File cancel | Extension file is canceled. |
| FileNot Exist | Extension file is not exist. |
| Format Excec | Formatting has been executed. |
| Invalid Disc * | The disc cannot be recognized. |
| Invalid Param * | Invalid parameter |
| Invalid TMVMG | Invalid TMP_VMGI content |
| Invalid UDF * | Invalid UDF content |
| Invalid VMG * | Invalid VMG content |
| Invalid VTSI | VTSI information of +VR is unusual. |
| Irr Action * | Incorrect action |
| MKB REVOKED | Error in gaining data |
| Limit Over * | Standard maximum limit exceeded |
| No More Info * | No more space in the internal work-management area |
| No Permission * | No permission to write to the disc |
| No Video | No video input (not locked) |
| Now Busy * | In the process of the emergency processing |
| NV Pck DMA Er | Inappropriate NaviPack DMA |
| NV Pck MK Err | Error in creating NaviPack |
| Ourob Strm NG | Inappropriate stream data to the Ouroboros input |
| Over Heat | Abnormal temperatute |
| PARAM NO ACCP | Recording parameter is not matched. |
| Process Over | Process is overfull. |
| Protect Src * | Source to be recorded is copy-protected. |
| Rec Pause * | No operation permitted during recording pause |
| Relocation Do | VR-recording data was relocated |

## ● Other Errors (continued)

| Error Message | Description |
|---|---|
| Repair Excec | Repairing has been executed. |
| Something * | Undetermined error |
| SRAM NG | Abnormality in access to the backup work SRAM |
| Status NG * | Abnormality in change of statuses |
| SW PVR | Switch to +VR playback process |
| SW Vpb mode * | Switching to video playback routine is required. |
| SW Vrec mode * | Switching to video recording routine is required. |
| Unmatch Stamp * | Impossible to modify because of nonmatching time stamp |
| VBR-SRAM NG | Abnormality in VBR SRAM |
| V Categ ID NG | Inappropriate Category ID |
| V Cate Inf NG | Inappropriate Category information |
| V Ext MAX Ovr | Count Max exceeded |
| V ExtToo Big | The extension file is too large. |
| V Ext TY NG | Type NG |
| Virgin DISC | Virgin Disc |
| VOBU Info NG | Inappropriate VOBU information |
| WaterMark Det | Watermark detected |
| WM Cracked | WM Cracked |
| Param Short | Editing Error (Clear A-B) |
| Invalid VRMI | Information of +VR is NG. (VRMI) |

## ● Error Related to HDD

| Error Message | Description |
|---|---|
| Do nothing | Do nothing for demand. |
| ESFSYS CORUPT | easyfsys error |
| ESFSYS INIT | easyfsys initializing |
| HDD Buff High | High-level process executed for the HDD Buffer |
| HDD DEF DONE | HDD deflag finished |
| HDD DEF ERR | HDD deflag error |
| HDD Destroy | HDD is not recognized on the bus. |
| HDD INFO BAD | Incorrect HDD Management Data |
| HDD Initialize | HDD initialized |
| HDD IRRG POFF | Abnormal power off |
| HDD MBR NG | Inconsistent MBR data |
| HDDReset Done | HDD Reset executed |
| HDD ROMSUM NG | Rom-code check sum NG |
| HDD SIG NG | Inconsistent HDD Management Data Magic |
| HDD SMART NG | Inappropriate HDD SMART |
| HDD Trans Err | DMA error in HDD copy transfer |
| HDD unauthor | Inconsistent HDD serial No. |
| HDD Zero WR | MBR was written |
| Task No Activ | Task has not been activated. |
| TT Rec Over | Title recording time full |
| HDD WRONG TGT | Invalid HDD target No. is directed. |
| extHDD Ignore | External HDD is dismounted. |
| HDD PFile NG | Program file installed in HDD is NG. |
| HDD DEL TT | Delete the title by HDD recovery. |
| HDD DEL PL | Delete the dubbing list by HDD recovery. |
| HDD DEL OC TT | Delete the title moving on the way inside HDD |

## ● No Error

| Error Message | Description |
|---|---|
| Non Err * | Normal |

**Abbreviations:**

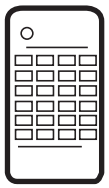
ECC = 4 byte Code for Error Correction
UDF = Universal Disc Format
PCA = Power Calibration Area
OPC = Optical Power Control
NWA = Next Writable Address
VMG = Video Manager
RMA = Recording Management Area
MKB = Media Key Block
TMP_VMGI = Temporary Video Manager Information
Border = from Lead-in to Lead-out

# 6.4 VR-PLAYBACK-RELATED ERROR LOGS (FIFTH SCREEN)

**[Purposes]**

It can be inferred that an operation that caused an error in the drive was performed or that a failure occurred in the drive if any of the error logs shown in "Table 2: Description of VR-playback-related errors" is recorded on this screen.

**[Tool to be used]**



Remote control unit for servicing
(GGF1381)

**[How to enter]**

- While the User Operation display is displayed, press the ESC, DISP, then 5 keys, in that order.
- While any subscreen of the fifth screen is displayed, press the DIG/ANA key repeatedly.
  The subscreens change cyclically.

**[How to quit]** Press the ESC key.

**[Description of each subscreen]**

**(1) Subscreen 1** (This subscreen is not for service use.)

**(2) VR-Playback Error Logs (Subscreen 2)**

- For details on error messages, see Table 2 "Description of VR-playback-related errors".
- If a VR-playback-related error is generated, a problem in data reading from the disc may be suspected.
  (The possibility of a problem on the drive side is high.)

```
①→ G:001-01 00h00m00s00          00000000
   Error=[00000000]
          h m s f   Name   Line   Message
②→ G001-01:00000001 ChgSta 01676 WaiPau Err
   L002-01 :00123002 ComInf 00669 DecHdl(14)
   L002-01 :00410303 ComInf 00669 DecHdl(40)
   G004-01:00000004 ChgSta 01676 WaiPau Err
```

① Information on display position
Original / Play list (G/L), Title No., Chapter No. [X:XXX-XX]
Display time (hour, minute, second & frame) [XXhXXmXXsXX]
Logic address for playback (ID) [XXXXXXXX]
Number of entries to error log [XXXXXXXX]

② Error message log
Original / Play list (G/L), Title No., Time of occurrence (min & sec) [XXX:XXXX]
Location of occurrence (this data is used for development), Name: Name of module where the error occurred, Line: Number of line where error occurred
Playback-system errors that occurred in 13 times of playback in past [XXX:XXXXXXX]
* For details of error information, refer to the Appendix Table 1.
* If information on errors which occurred on days earlier than the current day is contained on the screen, the information that follows the information which are displayed with "^" between “Time of occurrence”, “Name”, “Line” and “Message” indicates the errors that occurred on the current day.

## ◆ Description of VR-Playback-Related Errors

| Error Message | Details of error |
|---|---|
| AudioPB Err | Audio initialization error |
| WaiPau Err | Pause was disabled though tried. (Pause-wait timeout) |
| CC_OS_ERR | CC output processing error |
| Tr:NullBlk | No valid data in the first block |
| Tr:NaviErr | Navigation pack error |
| Tr:ReadErr | Data read error |
| Dec:PicDisp | Not played up to final PTS |
| Dec:Size | horizontal/vertical_size in sequence header is 0 or above 720 × 576. |
| Dec:PicTyp | picture_coding_type in picture header is neither of the I, P, nor B picture type. |
| Dec:Struct | picture_structure in picture coding extension is neither top/bottom_field or frame picture. |
| Dec:Syntax | Header size is insufficient or does not match with markerbit. |
| Dec:NoHead | No picture header exists between picture data. |
| Dec:SqErr | Detected sequence_error_code. |
| Dec:Refrenc | In Field structure, top_field and bottom_field of temporal_reference in picture header does not match. |
| Dec:Profile | profile_and_level_indication in sequence extension header is exceeding MP@ML. |
| DecHdl(**) | Decoder command execution timeout. (**) is replaced by No. of command which was to be executed.<br>The Nos. and names of commands are as follows.<br>/* DECODER system command */<br>0 HANDLER_DECODER_INIT,<br>1 HANDLER_DECODER_INIT_STARTUP,<br>2 HANDLER_DECODER_INIT_PLAY,<br>3 HANDLER_DECODER_INIT_RTR_PLAY,<br>4 HANDLER_DECODER_INIT_AUDIO,<br>5 HANDLER_DECODER_EXIT,<br>6 HANDLER_DECODER_BLACK_BACK,<br>7 HANDLER_DECODER_SET_DISP_FMT,<br>8 HANDLER_DECODER_SET_ASPECT_MODE,<br>9 HANDLER_DECODER_DISP_BITRATE,<br><br>/* DVD command */<br>10 HANDLER_DEC_DVD_VIDEO_PLAY,<br>11 HANDLER_DEC_DVD_VIDEO_PLAY_LIST,<br>12 HANDLER_DEC_DVD_AUDIO_PLAY,<br>13 HANDLER_DEC_DVD_STOP,<br>14 HANDLER_DEC_DVD_PAUSE,<br>15 HANDLER_DEC_DVD_PAUSE_STILL_MODE,<br>16 HANDLER_DEC_DVD_STEP,<br>17 HANDLER_DEC_DVD_REWSTEP,<br>18 HANDLER_DEC_DVD_PAUSE_OFF,<br>19 HANDLER_DEC_DVD_FF,<br>20 HANDLER_DEC_DVD_REW,<br>21 HANDLER_DEC_DVD_SLOW,<br>22 HANDLER_DEC_DVD_REWSLOW,<br>23 HANDLER_DEC_DVD_SCAN_OFF,<br>24 HANDLER_DEC_DVD_SLOW_OFF,<br>25 HANDLER_DEC_DVD_REWSLOW_OFF,<br>26 HANDLER_DEC_DVD_REWSKIP_TO_REWSLOW,<br>27 HANDLER_DEC_DVD_REWPAUSE,<br>28 HANDLER_DEC_DVD_PLAY_LIST_END_CHECK,<br>29 HANDLER_DEC_DVD_SET_CAPTION_SW_OFF,<br>30 HANDLER_DEC_DVD_SET_CAPTION_SW_ON,<br>31 HANDLER_DEC_DVD_REWPAUSE_TO_REWSLOW, |

| Error Message | Details of error |
|---|---|
| | 32 HANDLER_DEC_DVD_REGIST_TRICK_CALLBACK,<br>33 HANDLER_DEC_DVD_TRICK_DATA_END,<br>34 HANDLER_DEC_DVD_AUDIO_STOP,<br><br>/* management information */<br>35 HANDLER_DEC_INIT_NV_PCK,<br>36 HANDLER_DEC_INIT_RDI_PCK,<br>37 HANDLER_DEC_READ_NV_PCK_POINT,<br>38 HANDLER_DEC_READ_RDI_PCK_POINT,<br>39 HANDLER_DEC_READ_STC,<br>40 HANDLER_DEC_READ_PTS,<br>41 HANDLER_DEC_HLI_ENABLE,<br>42 HANDLER_DEC_COMMAND_PLAY,<br>43 HANDLER_DEC_COMMAND_PAUSE,<br>44 HANDLER_DEC_COMMAND_RSLOW_VOBU_STOP,<br>45 HANDLER_DEC_INIT_VIDEO_MODE,<br>46 HANDLER_DEC_SET_VIDEO_MODE,<br>47 HANDLER_DEC_CHECK_VIDEO_OUTPUT,<br>48 HANDLER_DEC_CHECK_VIDEO_ERROR,<br>49 HANDLER_DEC_DISPLAY_SUBPICTURE,<br>50 HANDLER_DEC_SET_SUBPICTURE_PALLET,<br>51 HANDLER_DEC_IPB_REVERSE,<br>52 HANDLER_DEC_SET_AUDIO_SYNC,<br>53 HANDLER_DEC_COMPULSION_OUTPUT_SUBPICTURE,<br>54 HANDLER_DEC_CLEAR_LAST_NV_PCK_POINT,<br>55 HANDLER_DEC_CLEAR_LAST_RDI_PCK_POINT,<br>56 HANDLER_DEC_GET_PICTURE_PARAM,<br>57 HANDLER_DEC_CHECK_BUFFER_EMPTY,<br>58 HANDLER_DEC_CHECK_TRICK_END,<br>59 HANDLER_DEC_READ_VCD_PTS,<br><br>/* still picture */<br>60 HANDLER_DEC_DVD_STILL_NOTIFY,<br>61 HANDLER_DEC_DVD_STILL_PLAY,<br>62 HANDLER_DEC_DVD_STILL_FF,<br>63 HANDLER_DEC_DVD_STILL_FF_OFF,<br>64 HANDLER_DEC_DVD_STILL_SLOW,<br>65 HANDLER_DEC_DVD_STILL_SLOW_OFF,<br>66 HANDLER_DEC_DVD_STILL_PAUSE,<br>67 HANDLER_DEC_DVD_STILL_PAUSE_OFF,<br>68 HANDLER_DEC_DVD_STILL_DATA,<br>69 HANDLER_DEC_DVD_STILL_GET_COUNT,<br><br>70 HANDLER_DEC_DVD_RDI_NOTIFY,<br><br>/* closed caption */<br>71 HANDLER_DEC_CAPTION_NOTIFY,<br>72 HANDLER_DEC_CAPTION_BUFFER_RESET,<br>73 HANDLER_DEC_CAPTION_SET_INPUT_USER_DATA,<br>74 HANDLER_DEC_CAPTION_SET_INPUT_FRAME_DATA,<br>75 HANDLER_DEC_CAPTION_SEND_FRAME_DATA,<br><br>76 HANDLER_DEC_FRAME_CHANGE_NOTIFY |

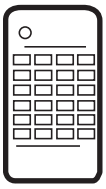
# 6.5 DV SERVICE MODE

## ◆ DV Debug

**[Purpose]**

To check whether communication between a DV device and the unit is normal when a DV device is connected

**[Tools to be used]**



Remote control unit for servicing (GGF1381)

- DV device
- DV cable

**[How to enter]** Press the ESC , DISP then 3 keys, in that order.

**[How to quit]** Press the ESC key.

**[Mode description]**

① **(DV/1394) Init:**OK **AV**:02 **DV**:01

② [**Recorder**] **GUID:**00E0360006100001 IRM
③ **iPCR**:C03F0000
④ [**DV**] **GUID:**0080880303480E96
⑤ **VN:**VICTOR **MN:**GR-D50K
⑥ **TM:**C3 **TS:**75 **CT:**32 **WP:**01 **PS:**FF **OS**:00
⑦ **CA:**A000002020 **MD:**VTR
⑧ [**DVdecode:**Yes] **LineSys:**525-60
⑨ **TC:**00h20m35s **RD:**02/02/05 **RT:**10h34m50s
⑩ **ASPECT:**4:3 **CGMS:**000000 **APSTB:**00 **DEC:**525-60
⑪ **SF:**32KHz **QU:**12bit **AMODE:**4) Stereo

Boldface alphanumerics : Fixed indications
Nonboldface alphanumerics : Variable indications

| No. | Item | Description | Remarks |
|---|---|---|---|
| ① | Init | Whether the initialization of 1394 LINK and DV decoder inside EMMA2RFEX has been completed (OK) or not (NG) | |
| | AV | Number of AV devices recognizing connection | Identification number of AV devices including D-VHS, Digital Tuner, etc other than DV devices. |
| | DV | Number of DV devices recognizing connection | If the number does not become 01 even if a DV device is connected, identification of that device fails. |
| ② | GUID | GUID set in ConfigROM of the unit | GUID : Global Unique ID (Specific ID for DV devices)<br>If the unit is ROOT (IRM), IRM is displayed at the side position of GUID display. |

| No. | Item | Description | Remarks |
|---|---|---|---|
| ③ | iPCR | iPCR value of the unit | |
| ④ | GUID | GUID set in ConfigROM of the connected DV device | Data are displayed only if one DV device is identified. If the connected DV device is ROOT (IRM), IRM is displayed at the side position of GUID display. |
| ⑤ | VN | Vendor name set in ConfigROM of the connected DV device | Data are displayed only if one DV device is identified. (Depending on the device, the vendor name may not be set in ConfigROM.) |
| | MN | Model name set in ConfigROM of the connected DV device | Data are displayed only if one DV device is identified. (Depending on the device, the model name may not be set in ConfigROM.) |
| ⑥ | TM | Transport Mode data obtained from the DV device | Data are displayed only if one DV device is identified. |
| | TS | Transport State data obtained from the DV device | |
| | CT | Cassette Type data obtained from the DV device | |
| | WP | Write-protection data obtained from the DV device | |
| | PS | Power-state data obtained from the DV device | |
| | OS | Output signal mode data obtained from the DV device | |
| ⑦ | CA | Connect AV data obtained from the DV device | Data are displayed only if one DV device is identified. |
| | MD | DV device mode | Camera or VTR is displayed only if one DV device is identified. |
| ⑧ | [DVdecode:XXX] | Whether Yes (in the process of requesting DV input) or No is indicated in XXX | Normally, Yes is indicated only when CH is set to DV. |
| | LineSys | Input Line System setting | |
| ⑨ | TC | Time-code data of the DVdecode Stream, or response data of the Time Code command | Stream time-code data are obtained when the tape is played in forward direction. Otherwise, time-code data are obtained through an AV/C command. |
| | RD | Rec Date of DVdecode Stream | |
| | RT | Rec Time of DVdecode Stream | |
| ⑩ | ASPECT | Aspect Ratio of DVdecode Stream | |
| | CGMS | CGMS of DVdecode Stream (from left to right, CGMS data of bits 5-4: Audio ch 2, bits 3-2: Audio ch 1, and bits 1-0: Video) | *CGMS (Copy Generation Management System): The two-digit codes added to broadcast programs represent the following: 00: Copy freely, 10: Once copy, 11: Never copy |
| | APSTB | APS trigger bit of DVdecode stream | |
| | DEC | With/without DVdecode stream input | With input: Signal type (525-60, 625-50, 1125-60, 1250-50, or Invalid) is indicated, Without input: "No" is indicated. |
| ⑪ | SF | Sampling Frequency of DVdecode Stream | If SF is 44 kHz, it is considered that 44.1-kHz audio is input, and sound is muted on the unit. |
| | QU | QUANTIZATION of DVdecode Stream | |
| | AMODE | AUDIO MODE of DVdecode Stream | |

| Symptoms | | Location in the Debug Screen | Items to be Checked, and Conditions | Possible causes |
|---|---|---|---|---|
| No operation for DV input | 1 | DV ① | Check the init indication:<br>OK: Initialization of 1394 LINK and DV decoder inside EMMA2RFEX appropriately completed.<br>NG: Initialization of 1394 LINK and DV decoder inside EMMA2RFEX has not been completed properly. | Defective IC1001(EMMA2RFEX)/ IC5103(1394PHY), improper connection between IC1001 / IC5103, defective soldering, defective power supply, etc. |
| | 2 | DV ① | Check the number of DV devices when one DV device is connected to the recorder:<br>01 : The connected DV device is correctly identified.<br>Other than 01 : The connected DV device is not correctly identified. | Defective DV terminals, improper connection of the DV-terminal board, defective IC5103(1394PHY), defective cables, an IEEE 1394 device other than the DV device connected. |
| No picture nor sound for DV input | 1 | DV ⑧ | Check of DV decoding when the recorder channel is set to DV:<br>Yes: The recorder is in the process of a DV input operation<br>No: The recorder is not executing a DV input operation | Defective IC1001(EMMA2RFEX), defective soldering, defective power supply, etc. |
| | 2 | DV ⑩ | Check DEC:<br>525-60: An NTSC DV signal is input from the DV device.<br>625-50: A PAL DV signal is input from the DV device.<br>No: No DV signal is input from the DV device. | Defective DV terminals, improper connection of the DV-terminal board, defective source device<br>defective IC1001(EMMA2RFEX), IC5103(1394PHY)<br>**Note:** As to a model having the Input Line System setting, if the setting and the actual input signal system do not match, no picture appears. |
| DV input recording impossible | 1 | DV ⑩ | Check CGMS: | Recording cannot be performed for a copy-protected source. |
| No sound for DV input | 1 | DV ⑪ | Check SF:<br>32 khz: An audio signal with 32-kHz sampling frequency is being input.<br>48 khz: An audio signal with 48-kHz sampling frequency is being input.<br>44 khz: An audio signal with 44.1-kHz sampling frequency is being input. | An audio signal with 44.1-kHz sampling frequency is muted. |

# 6.6 HDMI SERVICE MODE

**[Purposes]**

To check the statuses of the connected HDMI devices.

**[Tool to be used]**

Remote control unit for servicing (GGF1381)

- HDMI device
- HDMI cable

**[How to enter]** • Press the ESC, then DISP key 24 times.

**Note:** Do not press any key on the remote control unit supplied with the unit or for servicing while the HDMI debug screen is displayed.

**[How to quit]** Press the ESC key.

**[Description of the mode]**

**1. HDMI MAIN information screen (First screen)**

```
00 [HDMI]                                1/6
01  Connect:***   Reso :*********    Audio:***
02  DevType:****  Color:**********   APath:*****
03  TMDS   :***   HDCP :** : **      Fs   :***
                          SType:
    [Video Check]
     Pic_Asp    :
     Active_Asp :
    [Copyright Control Check]
     ACP_Type:        (Actual send:       )
     ChSts0:   ChSts1:   (C: , L: )
    [Digital Tuner]
     HDMI Out: AC3 32kHz
     LL SPDIF: AC3 32kHz   DAC: 32kHz
```

**(*1) [Tips]**

Because all the data on connection and authenti--cation are canceled once the function of the connected HDMI device is set to a position other than HDMI, all the debugging data in Table 1 are deleted.

Table 1: Description of the items on the HDMI main information screen

| Line | Item | Description | Remark |
|---|---|---|---|
| 1 | Connect | Connection status of the HDMI device | See Table 2. |
| | Reso | Output resolution | See Table 3. |
| | Audio | HDMI audio output status | See Table 4. |
| 2 | DevType | Type of connected device | See Table 5. |
| | Color | Output color | See Table 6. |
| 3 | TMDS | TMDS (video stream) signal output status | See Table 7. |
| | HDCP | HDCP Authentication status | See Table 8. |
| | Fs | Output audio Fs | See Table 9. |

Table 2: Connection status of the HDMI device

| Indication | Description |
|---|---|
| ON | Connected |
| HtPlg | Not connected but Hot plug is ON. |
| OFF | Not connected |

Table 3: Output resolution

| Indication | Description |
|---|---|
| 480i NTSC | 720x480i NTSC |
| 480p NTSC | 720x480p NTSC |
| 720p NTSC | 1280x720p NTSC |
| 1080i NTSC | 1920x1080i NTSC |
| 1080p NTSC | 1920x1080p NTSC |
| 576i PAL | 720x576i PAL |
| 576p PAL | 720x576p PAL |
| 720p PAL | 1280x720p PAL |
| 1080i PAL | 1920x1080i PAL |
| 1080p PAL | 1920x1080p PAL |
| ---------- | TMDS Off |

## [Description of the Main screen] (Continued)

Table 4: HDMI audio output status

| Indication | Description |
|---|---|
| OFF | Output: Off |
| ON | Output: On |

When the unit is connected to DVI device (refer to Table 5), the Audio is not outputted.

Table 5: Type of the connected device

| Indication | Description |
|---|---|
| ------ | Not connected |
| HDMI | It has been confirmed that an HDMI device supporting HDCP is connected. |
| DVI | It has been confirmed that a DVI device supporting HDCP is connected. |

When the unit is connected to device with no HDCP support, this display is "HDMI-" or "DVI-".

Table 6: Output color

| Indication | Description |
|---|---|
| YCbCr4:2:2 | Component 12 bits (YCbCr4:2:2) |
| YCbCr4:4:4 | Component (YCbCr4:4:4) |
| RGB(0-255) | RGB full range (0-255) |
| RGB(16-235) | RGB (16-235) |
| ---------- | TMDS Off |

Table 7: TMDS signal output status

| Indication | Description |
|---|---|
| OFF | Output: Off |
| ON | Output: On |

Table 8: HDCP

Left side : HDCP Authentication Status

| Indication | Description |
|---|---|
| -- | If an device supporting HDCP is connected, HDCP authentication is in progress. |
| OK | HDCP authentication succeeded. |

Refer to this item only when HDMI or DVI is displayed for the item for the type of the connected device (Table 5).
If OK is not displayed although HDMI or DVI is displayed, it means that the HDCP authentication failed.

Right side : Check Revocation list

| Indication | Description |
|---|---|
| -- | Checking that the connected device (all downstream devices) is not registered to the Revocation list, or so. |
| OK | The connected device (all downstream devices) is not registered to the Revocation list. |

Refer to this item only when HDMI or DVI is displayed for the item for the type of the connected device (Table 5).
When there is also no valid SRM (include Revocation list), "--" is displayed here.

Table 9: Fs

| Indication | Description |
|---|---|
| 32k | 32kHz |
| 44k | 44.1kHz |
| 48k | 48kHz |
| 96k | 96kHz |
| 96k/2 | 48kHz (original data of 96kHz is down-sampled.) |
| --- | Audio Off |

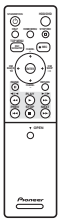
# 6.7 AGING MODE

**[Purposes]**

If symptoms regarding recording/ playback of discs and/or the HDD that your customer claimed are difficult to reproduce, they can be reproduced with a long-time test in Aging mode.

**[Tools to be used]**

Remote control unit for servicing (GGF1381)



Remote control unit supplied with the unit (VXX3223)

Commercially available, recordable DVD-R/+R and DVD-RW/+RW/ -RAM discs

**[Notes]**

- When aging for the DVD-RW/+RW/-RAM and HDD is executed, all recorded data on them will be erased.
- Commands from the remote control unit are accepted during Aging mode.
- If Aging mode is quit using the ESC key, indications on the FL display will return to normal display.
- Cancel timer settings before entering Aging mode.
- Set the recording rate beforehand. It cannot be changed during Aging mode.

**[How to enter]**

① Press the DVD key to switch to DVD.
② Load a recordable disc.
③ Select the input function of a recordable source.
④ After disc detection is performed, press the ESC then REP.B, and then PLAY keys on the remote control unit for servicing to enter Aging mode.

**[How to quit]**

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

**Notes:**

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during initialization: The unit stops after initialization is finished. ← (aging for ±RW/-RAM only)
- If the tray is being opened/closed: The unit stops after the tray is opened/closed. ←

**[Description of operation]** **Aging for the DVD-RW/DVD-R**

| Aging for the DVD-RW/+RW/-RAM | Aging for the DVD-R/+R |
|---|---|
| During Aging mode, the following operations are repeated in the order shown below.<br>① The tray opens.<br>② The tray closes.<br>③ Initialization<br>④ Recording for 60 minutes<br>⑤ Playback for 45 minutes<br><br><DVD-RW><br>The initialization process in step 3 follows the setting specified in "Disc setting--Basic--Auto initialization of a DVD-RW."<br><DVD+RW><br>The initialization process in step 3 is the same as that described in "Disc setting--Initialization--Initialization of a DVD+RW."<br><DVD-RAM><br>In the initialization process in step 3, physical formatting is performed, if required.<br><br>During Aging, the number of loops is indicated on the FL display, as shown below.<br>[AGING 0001]<br><br>If an error is generated, the aging operation stops.<br>**Note:** Indications on the FL display are retained, and this information is also retained as an OSD. | During Aging mode, the following operations are repeated in the order shown below.<br>① The tray opens.<br>② The tray closes.<br>③ Recording for 1 minute<br>④ Recording pause for 6 minutes<br>⑤ Recording stops.<br>⑥ Playback for 1 minute<br>⑦ Playback pause for 6 minutes<br>⑧ Playback stops.<br>**Note:** A continuous test of the above operations is possible for approximately 23 hours.<br><br>After ② the tray closes, disc detection is performed,<br><DVD-R><br>In step 2, if the disc is judged to have recorded up to 99 titles, the operation stops at that point.<br><DVD+R><br>If the disc is judged to have recorded up to 49 titles, the operation stops at that point. On the FL display, the number of loops is retained. On the OSD display, the error indication is retained.<br><br>During Aging, the number of loops is indicated on the FL display, as shown below.<br>[AGING 0001]<br><br>If an error is generated, the aging operation stops.<br>**Note:** Indications on the FL display are retained, and this information is also retained as an OSD.<br><br>**Note:** Recording time depends on the recording rate set. For example, if the recording rate is MN32, only up to 60 titles can be registered. Check the setting for recording rate before performing aging. |

## [Aging for the HDD]

**[How to enter]**

① Press the HDD key to switch to HDD.
② Press the ESC key then the REP.B, and then the PLAY keys on the remote control unit for servicing to enter Aging mode.

**[How to quit]**

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

**Notes:**

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during erasure of all memory data from the HDD, the unit stops after all memory data have been erased.

**[Description of operation]**

During Aging mode, the following operations are repeated in the order shown below.
① Erasure of all the memory data from the HDD
② Recording for 60 minutes
③ Playback for 60 minutes

* Take caution as all recorded data of the HDD is deleted.

**[Tips]**

During Aging, the number of loops is indicated on the FL display, as shown below.
[AGING 0001]

If an error is generated, the aging operation stops.

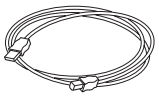
**Note:**
Indications on the FL display are retained, and this information is also retained as an OSD.

# 6.8 USB CHECK MODE

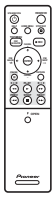
**[Purposes]**

As this unit is provided with two USB ports, operation checks of these ports are possible by connecting them (loop connection).

**[Tools to be used]**



USB cable (GGD1445)



Remote control unit supplied with the unit (VXX3223)

Remote control unit for servicing (GGF1381)

**[How to enter this mode]**

1. Connect Connector A (at the front panel) and Connector B (at the front panel), using a USB cable.
2. Enter USB Check mode.
   Press the ESC key on the remote control unit for servicing then press the TIMER REC key on the remote control unit supplied with this unit.

**[How to quit]**

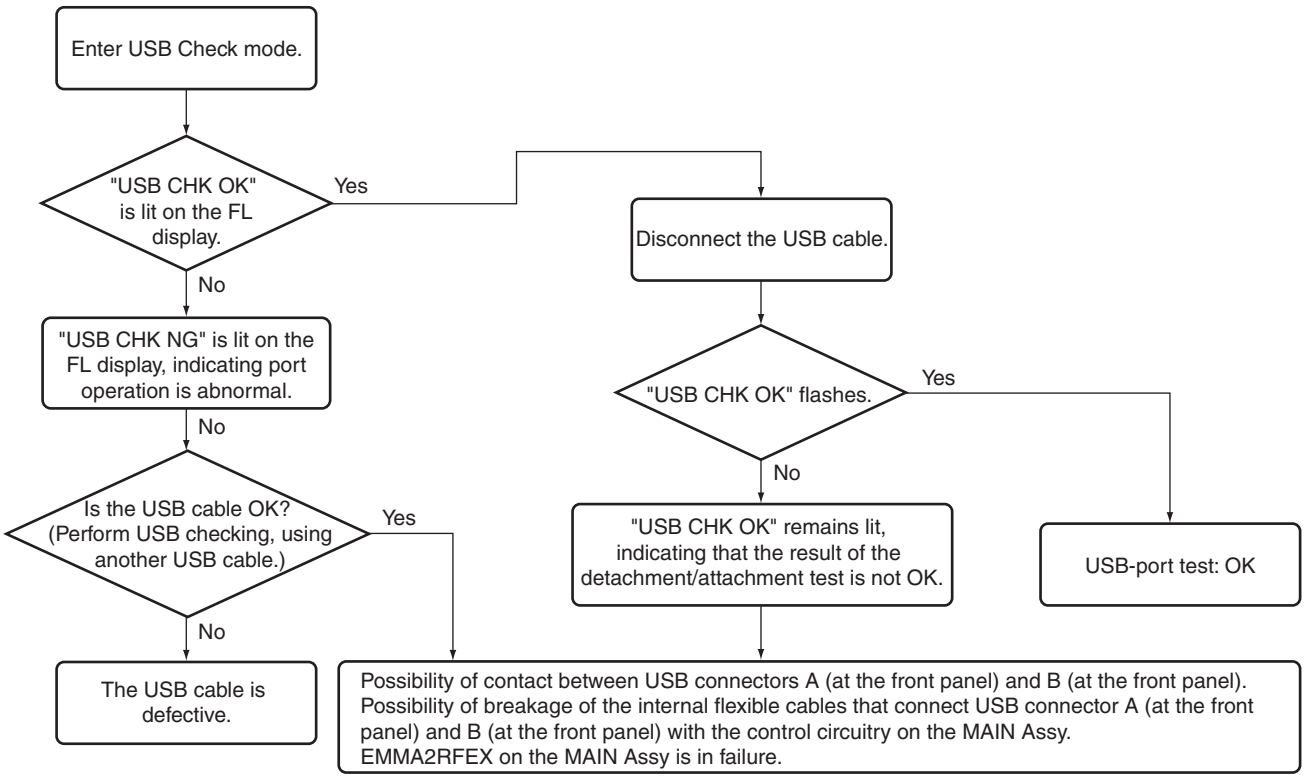
To quit while the ports are operating properly ("USB CHK OK" is lit.): Press the ESC key or the clear key.
To quit while port operation is abnormal: Turn the power off then back on.

**[Procedures]**

1. Check the indication on the FL display.
   When the two ports are operating properly: "USB CHK OK" is lit.
   When port operation is abnormal: "USB CHK NG" is lit.

2. When "USB CHK OK" is lit in Step 1, disconnect the USB cable in order to perform the detachment/attachment test.
   The indication on the FL display will change, as follows:
   If the result is OK: "USB CHK OK" will flash.
   If the result is not OK: "USB CHK OK" will remain lit.

**[Troubleshooting]**


Enter USB Check mode.
"USB CHK OK" is lit on the FL display.
Yes
No
Disconnect the USB cable.
"USB CHK NG" is lit on the FL display, indicating port operation is abnormal.
"USB CHK OK" flashes.
Yes
No
No
Is the USB cable OK? (Perform USB checking, using another USB cable.)
Yes
"USB CHK OK" remains lit, indicating that the result of the detachment/attachment test is not OK.
USB-port test: OK
No
The USB cable is defective.
Possibility of contact between USB connectors A (at the front panel) and B (at the front panel).
Possibility of breakage of the internal flexible cables that connect USB connector A (at the front panel) and B (at the front panel) with the control circuitry on the MAIN Assy.
EMMA2RFEX on the MAIN Assy is in failure.

# 6.9 HDD CHECK MODE

## ◆How to Diagnose Failure of the Hard Disc Drive (HDD)

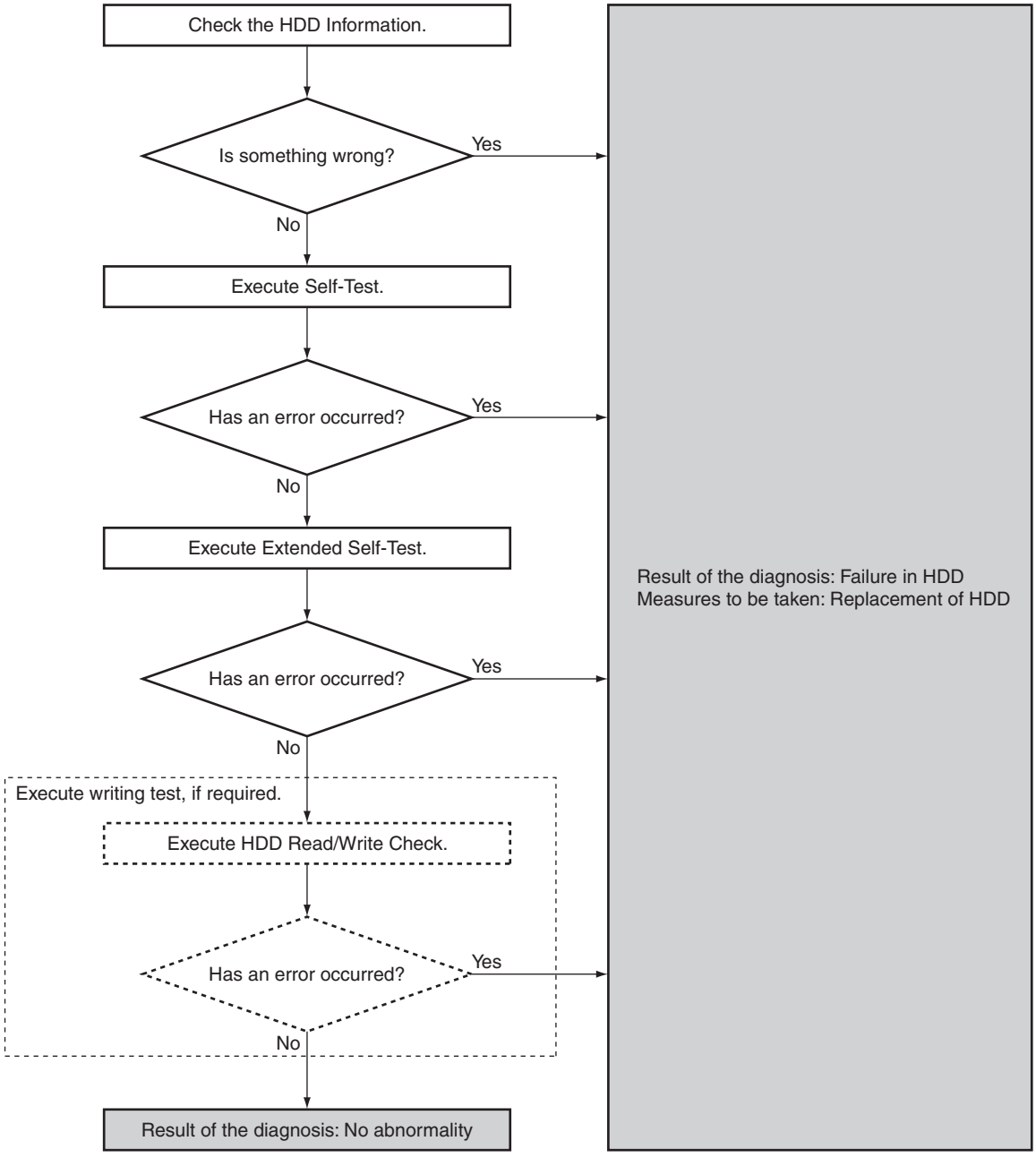
**Purpose:**
With use of the HDD-diagnostic program contained in the product itself, physical errors on the HDD can be diagnosed. Use this program to diagnose whether or not the HDD is in failure when one of the symptoms indicated below is recognized, or when a failure in the HDD is suspected.

**Symptoms of failure in HDD:**
(1) HDD Error
(2) Failure in HDD recording or playback
(3) HDD not recognized

**Tool to be used:**
Remote control unit for servicing (GGF1381)

## ◆Flow of HDD Diagnosis

### (1) Flowchart of HDD diagnosis



### (2) Overview of the diagnosis items

| | |
|---|---|
| **HDD Information** | This is a display for checking the HDD information, such as the model name of the HDD, continuous power-on time, authentication status, and results of the diagnosis on the end of service life. |
| **SELF TEST** | This is a simplified diagnosis for the HDD.<br>A serious failure in the HDD can be detected with this test.<br>Time required for testing: Approx. 60 sec. |
| **EXTENDED SELF TEST** | This is a reading test across all sectors of the HDD.<br>Data recorded on the HDD will not be erased, because no writing operation is performed.<br>Time required for testing: Approx. 3.2 hours/250 GB (DVR-650H-K)<br>2 hours/160 GB (DVR-550H-K, DVR-450H-S) |
| **HDD Read / Write Check** | This is a writing, reading, and comparing test across all sectors of the HDD.<br>**All data recorded on the HDD will be erased**, because all the data are to be overwritten. **Be sure to obtain your client's consent beforehand.**<br>Time required for testing: Approx. 10 hours/250 GB (DVR-650H-K)<br>6.4 hours/160 GB (DVR-550H-K, DVR-450H-S) |

## ◆ How to Start or Terminate the Diagnostic Program

### How to start/terminate the diagnostic program

Use the remote control unit for servicing.

How to start: Press the "ESC", "CX", "0", and "1" keys simultaneously.

How to terminate: Press the "ESC" key.

Do NOT perform other operations on the unit while the HDD diagnosis is in progress. Although the diagnostic program is designed to function independently from the unit's functions, an operation on the unit during a diagnosis may cause a malfunction.

The status of the unit recommended during diagnosis is as follows: All stop, no timer recording (including auto-recording), and Input selection to L1-L3.

## ◆ Diagnosis Procedures

① Display the menu on the screen.
The menu indicated below is displayed when the diagnostic program is started. To enter each mode, press the corresponding key "1"-"4" on the remote control unit for servicing.

```
   HDD CHECK MODE       [1-4]

1  HDD Information
2  S.M.A.R.T. Attribute Information
3  S.M.A.R.T. DST
4  HDD R/W Check
```

**Tests to be executed**
① HDD Information:
Check of the HDD information
② S.M.A.R.T. DST:
Executing a simplified test or a reading test of all data
③ HDD R/W Check:
Executing a writing/reading test of all data. All data on the HDD will be erased if this test is executed.

**Note:** "2. S.M.A.R.T. Attribute . . ." is not to be used.

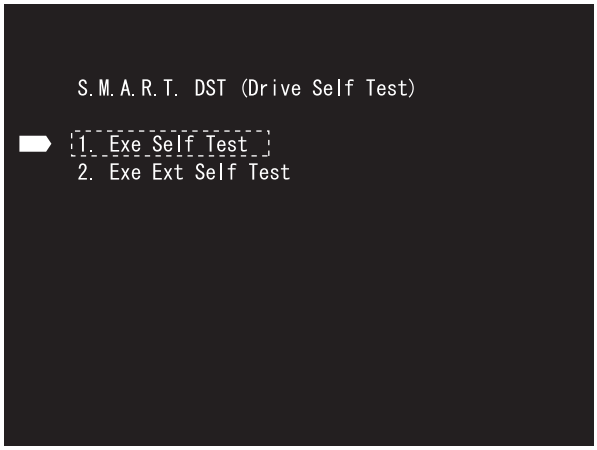
② Check the HDD information.
Press the "1" key on the remote control unit for servicing. Check the following data:
Model: Is the correct model name of the HDD displayed?
Recog. No: Is a positive value displayed?
SMART threshold: Is "not exceeded" displayed?

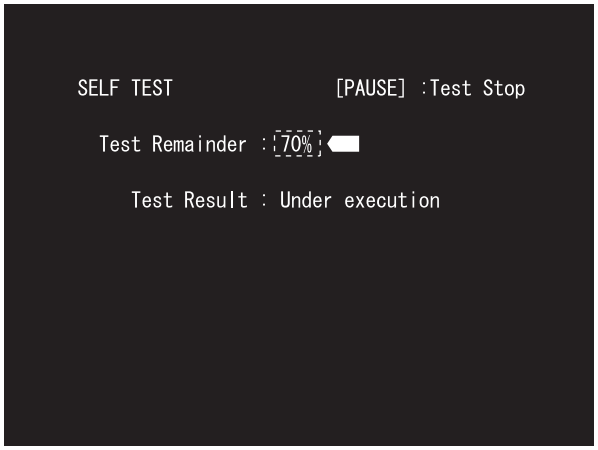
```
   HDD Information
   Cylinders:0x3FFF     Heads:0x0010
   Sec/Track:0x003F
   Model     :Maxtor 4R080L0
   Firmware :RAMC1TU0
   SN       :R22RRL2SE
   Major No :ATA/ATAPI-7
   Life Time:33h 10m 30s
   Recog. No:-1
   SMART threshold: not exceeded
```

**Detailed description**
① Model:
For the correct model name, refer to the display of the unit.
② Recog. No:
Positive value: The HDD has been authenticated.
Negative value: The HDD has not been authenticated.
③ SMART threshold:
exceeded: The HDD has come to the end or near the end of its service life.
not exceeded: The HDD has not reached the end of its service life.

To return to the menu screen, press the "Clear" key.

③ Execute Self-Test.
Press the "3" key on the remote control unit for servicing while the menu screen is displayed.
When the following screen is displayed, press the "1" key to start the Self-Test.



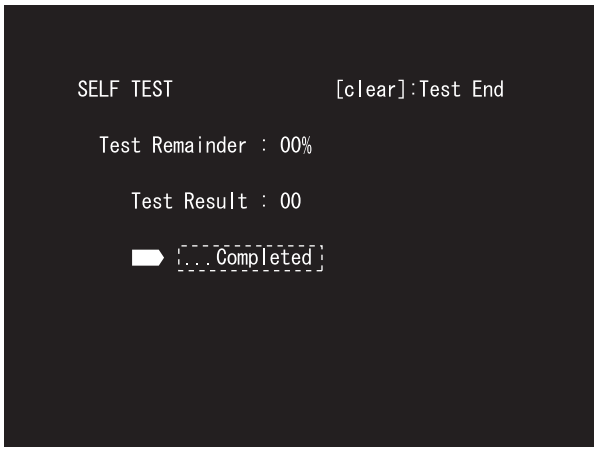




The progress of the test is displayed on the screen. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%.
Check whether or not an error has occurred after the test is finished.

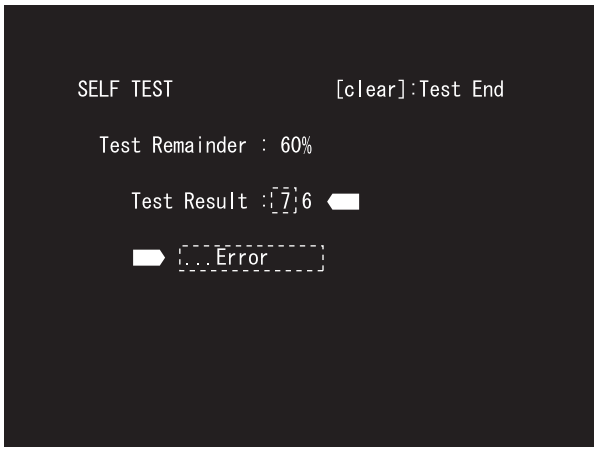
**Diagnosis results**
- Without an error: ". . . Completed" is displayed.
  Then, proceed to the Extended Self-Test.
- With an error: ". . . Error" is displayed. Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

**Note:** If the result of the second test is the same, replacement of the HDD is required.

**Example: No error**

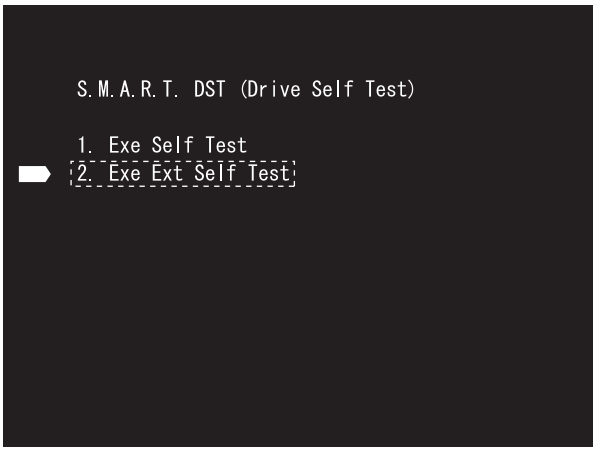


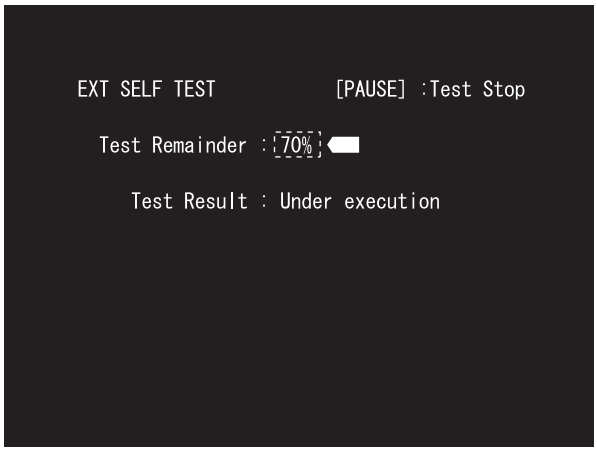

**Example: With an error**




To return to the menu screen, press the "Clear" key.

④ Execute the Ext (Extended) Self-Test.



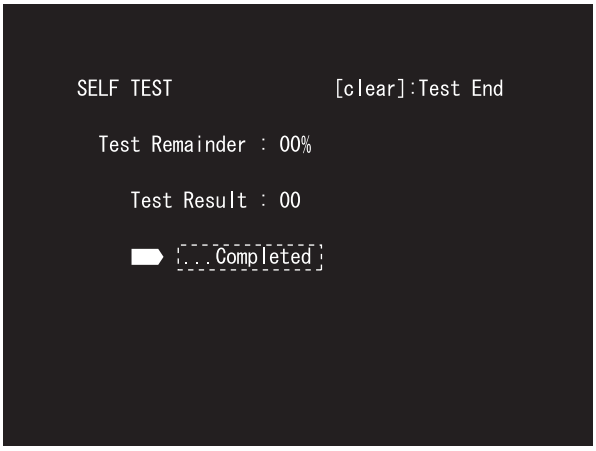




Press the "3" key while the menu screen is displayed, then the "2" key on the remote control unit for servicing. The Extended Self-Test starts. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%. Check whether or not an error has occurred after the test is finished.

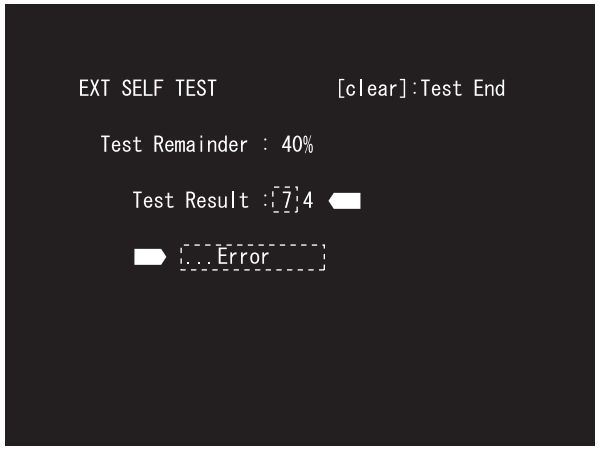
**Diagnosis results**
- Without an error: ". . . Completed" is displayed.
  If no error occurs up until this stage, HDD operations are normal except for writing operations.
  If the unit has a failure in HDD playback, a block other than the HDD may be in failure.
  If the unit's failure is in HDD recording, however, the next HDD Read/Write Check must be executed to test writing operations.
- With an error: ". . . Error" is displayed.
  Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Ext Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

**Note:** If the result of the second test is the same, replacement of the HDD is required.

Example: No error




Example: With an error



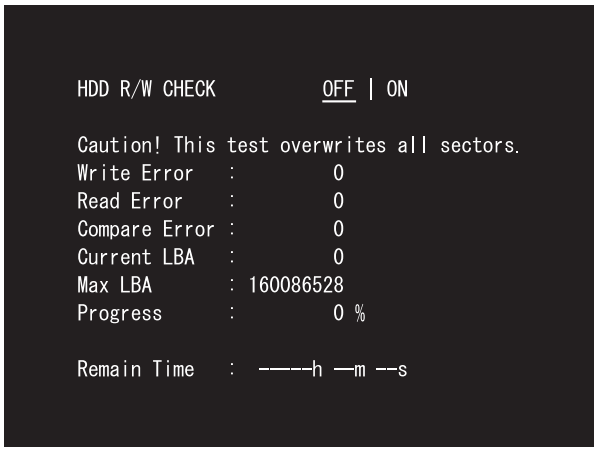

To return to the menu screen, press the "Clear" key.

⑤ Execute the HDD R/W Check.

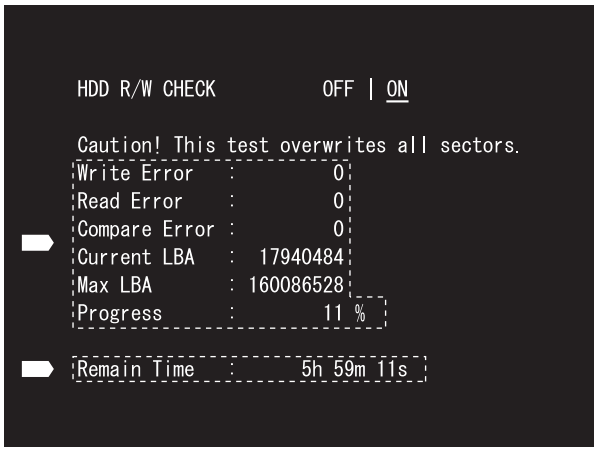
Before executing this test, **be sure to obtain your client's consent for erasure of HDD data**.

Press the "4" key while the menu screen is displayed then the "SKIP ►►I" key to start the HDD R/W Check.

To stop executing the test (OFF) while it is in progress, press the "SKIP I◄◄" key.


HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 0
Max LBA : 160086528
Progress : 0 %
Remain Time : ----h --m --s

The display on the left indicates the progress of the test.
The percentage of the test progress is displayed on the screen, and the test is finished when the percentage reaches 100%.


HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 17940484
Max LBA : 160086528
Progress : 11 %
Remain Time : 5h 59m 11s

**Detailed description on each item on the screen**

- Write Error: Number of write errors
- Read Error: Number of read errors
- Compare Error: Number of comparison errors
- Current LBA: The address during testing
- Max LBA: Highest address number of the HDD
- Progress: Percentage of test progress (%)
- Remain Time: Estimated time required for finishing the test across all sectors.
  Estimated time: 10 hours/250 GB (DVR-650H-K)
  6.4 hours/160 GB (DVR-550H-K, DVR-450H-S)

**Diagnosis results**

- If no error occurs in any of the Write/Read/Compare items, the HDD is in normal condition and is not required to be replaced. A block other than the HDD is in failure.
- If any error occurs, the HDD must be replaced.

To terminate the diagnostic program, press the "ESC" key.

# 7. DISASSEMBLY

**Note 1:** Do NOT look directly into the pickup lens. The laser beam may cause eye injury.
**Note 2:** Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

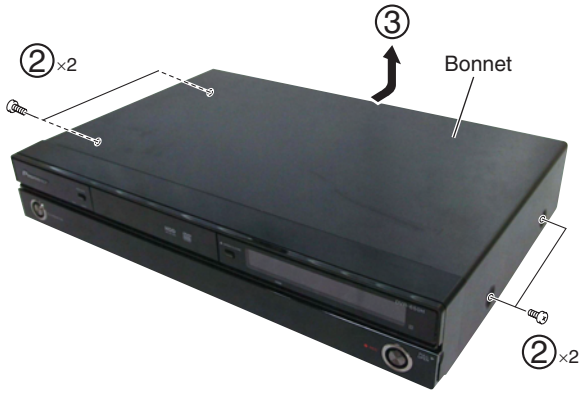
## ◆ Diagnosis

### 1 Bonnet

① Remove the five screws.

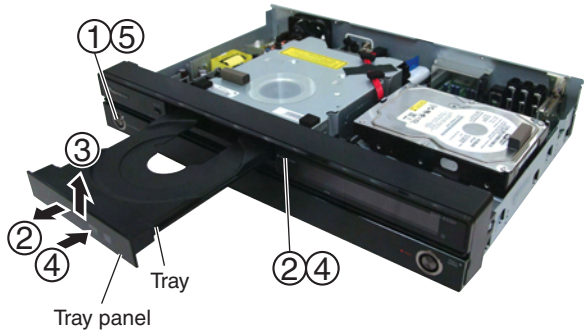
● Rear view

② Remove the four screws.
③ Remove the bonnet.



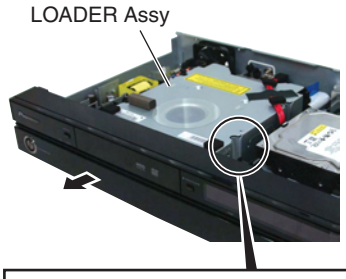

### 2 Tray Panel

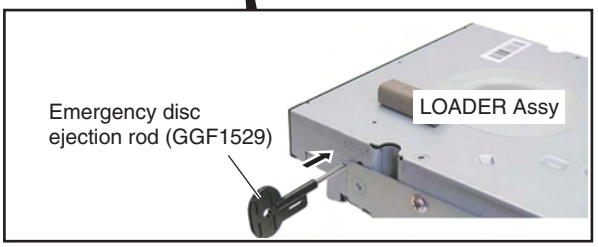
① Press the ⏻ STANDBY/ON button to turn on the power.
② Press the ⏏ OPEN/CLOSE button to open the tray.
③ Remove the tray panel.
④ Press the ⏏ OPEN/CLOSE button to close the tray.
⑤ Press the ⏻ STANDBY/ON button to turn off the power.




● **How to open the tray when the power cannot be turned on**

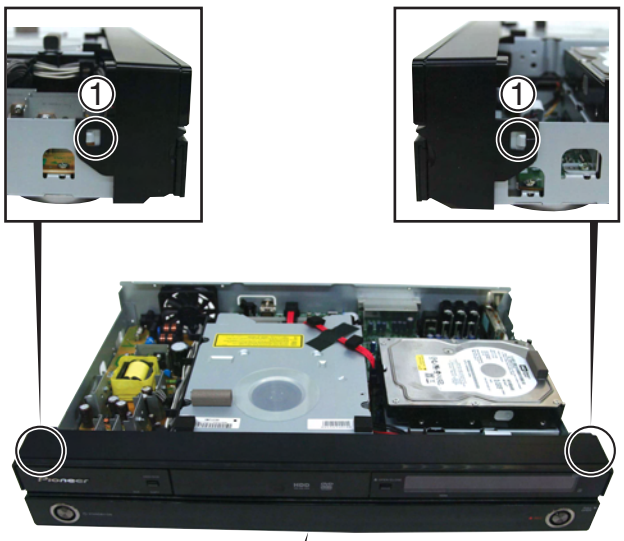
When the tray cannot be opened because the power cannot be turned on, it can be opened using the emergency disc ejection rod (GGF1529). (A long, thin rod about 1 mm in diameter can be used in place of the rod.)



## 3 Front Panel Section

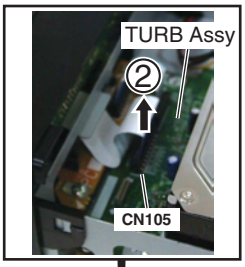
① Unhook the four hooks.

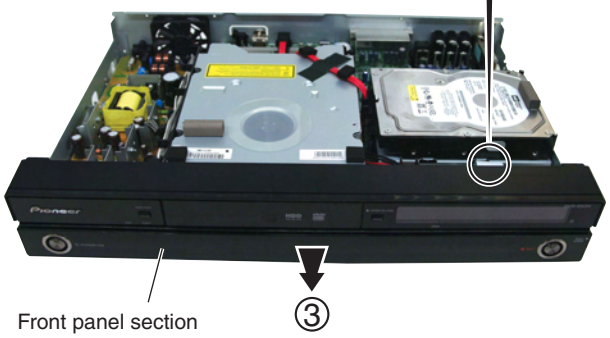



● Bottom view

② Disconnect the one flexible cable.

③ Remove the front panel section.



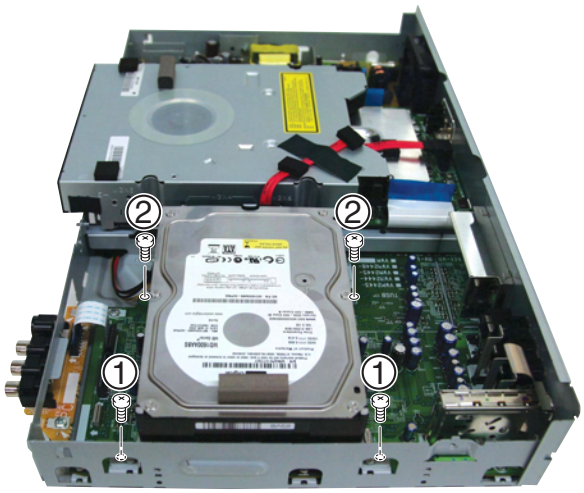

Front panel section

## 4 HDD and LOADER Assy

### • HDD

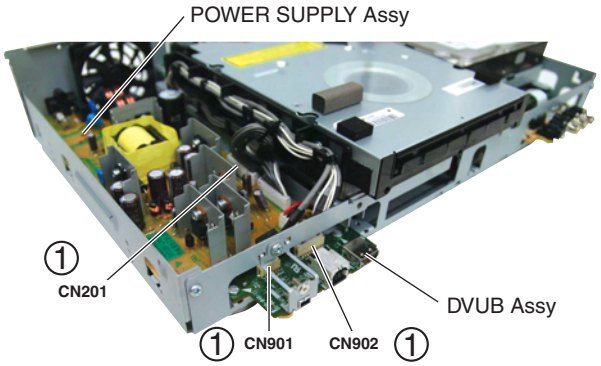
① Remove the two screws.

② Remove the two screws.

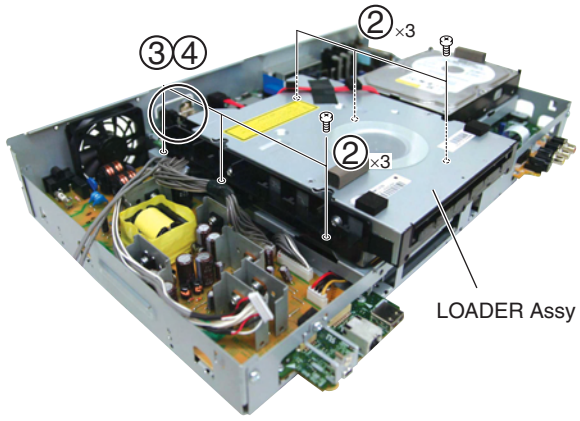



### • LOADER Assy

① Disconnect the three connectors (CN201,CN901,CN902).



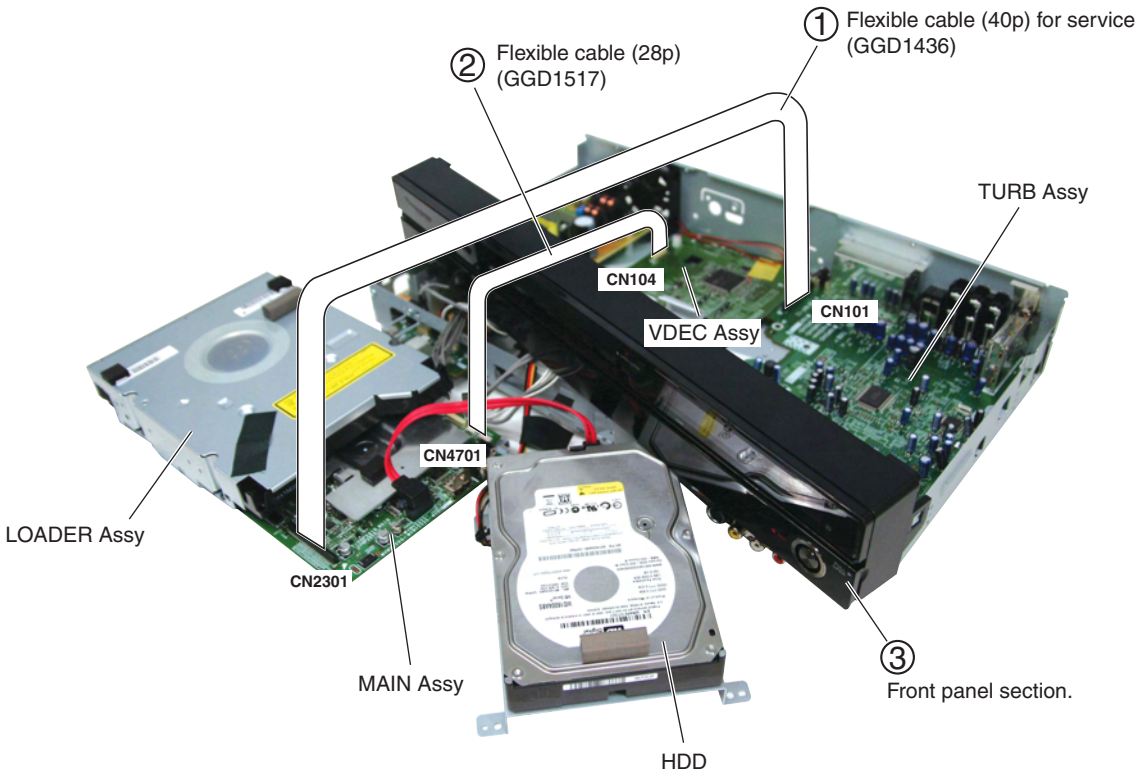
② Remove the six screws.
③ Remove the screw(Rear Panel Side).
④ Remove the screw(Rear Panel Side).



## 5 Diagnosis

① Connect the flexible cable for service.
② Connect the flexible cable for service.
③ Reassembling the front panel section.
④ Arrange the unit as shown in the photo below.

**Diagnosis**

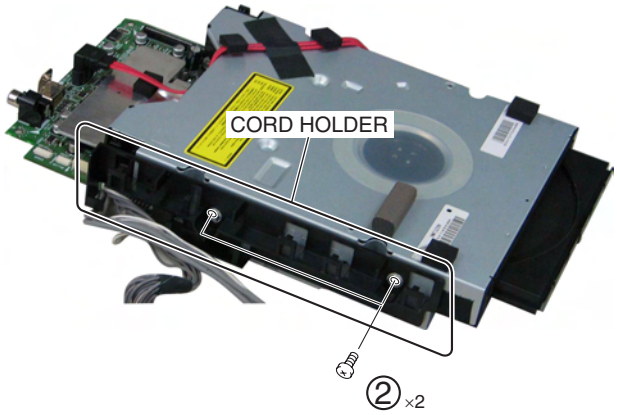


# ◆ Access to the MAIN Assy, Cleanning the Pickup Lens

## • Writer Stay L and R

① Remove the two binders.

② Remove the two screws and CORD HOLDER.

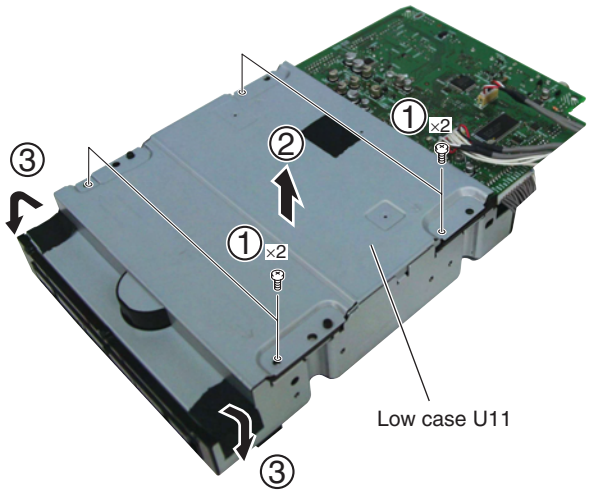



## • Low Case U11 and Loader Assy

① Remove the four screws.

② Remove the low case U11.

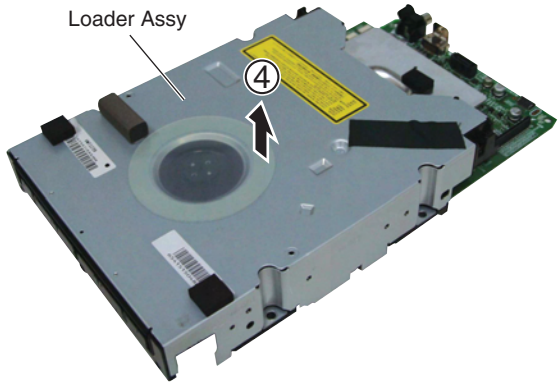
③ Remove the tape.




● Bottom view

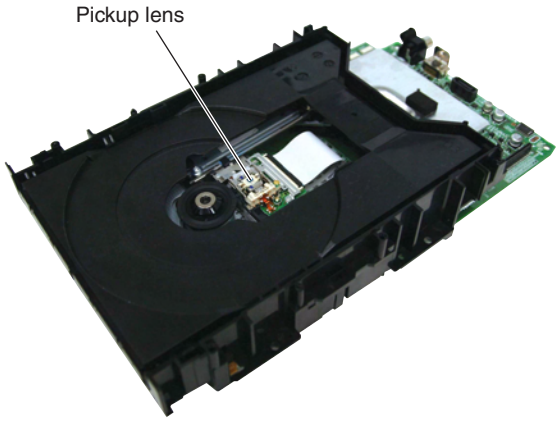
● Bottom view

④ Remove the Loader Assy.




Before shipment, be sure to clean the pickup lens, using the following cleaning materials:

Cleaning liquid : GEM1004
Cleaning paper : GED-008



# 8. EACH SETTING AND ADJUSTMENT

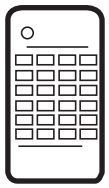
## 8.1 MODEL SETTING

**[Purposes]**

When the MAIN Assy and/or TUJB Assy that are(is) commonly used with another model are(is) replaced, they(it) must recognize the model of this unit.

Items to be set: The model number, destination, and region No. must be set.

**[Tool to be used]**



Remote control unit for servicing
(GGF1381)

**[Notes]**

- Once the setting has been made, it can never be changed. Be sure to make the setting correctly.
- As this setting resets the Assy(s) in question to the factory-preset status, it is recommended that you obtain the customer's consent beforehand.

**[Procedures]**

① After power on, the following screen is displayed on TV monitor. Press “1” by using the remote control unit for service. Do not choose “2” as it is for OEM models. If you have chosen “2”, disconnect the AC power cord.

```
[Recorder's Model Setting]
Input the number using the remote for Service

>     ?

Input No.   Manufacturer
[      1  :  P              ]
[      2  :  S              ]
```

② The following screen is displayed on TV monitor. Press four digits properly (for example " 0207 ") by using the remote control unit for service, according to the screen information.

```
[Recorder's Model Setting]
Input the number using the remote for Service

>  - - - -

Input No.   Model
[  0107  :  DVR-550H/KC      ]
[  0207  :  DVR-650H/KC      ]
[  0307  :  DVR-450H/KC      ]
[  0110  :  DVR-550H/TF      ]
[  0210  :  DVR-650H/TF      ]
[  0310  :  DVR-450H/TF      ]
[  0212  :  DVR-650H/TDR     ]
```

③ Disconnect then reconnect the AC power cord of the unit. Be careful not to impart vibration to the unit immediately after the AC power cord is disconnected.

④ Reset the recorder to all its factory settings.
(Make sure that the recorder is on. Press and hold ■ (STOP) key and press ⏻ (STANDBY/ON) key on the front panel.)
The recorder turns off with all settings reset.

```
DVR-650H/KC        VERSION: 0.65
   SYSCON  : RELEASE_92
             Rev.1.5627
TUNERCON   : 1.174                    OK
    DRIVE  : DVD-RW  DVR-L12X         OK
             0.19                     OK
PIC SERIAL : 000800004185
  HDD INT  : ST3160212SCE             160


  DEVICE  : E2R-FEx1.0     FLASH : 64M
  REGION  : 1            C : 0000000001
                    HDCP : 0000000001
```

⑤ Press [ESC] then [DISP] keys by using the remote control unit for servicing, and then confirm each Model Name (for example " DVR-650H/KC ").

⑥ End

# 8.2 LD POWER ADJUSTMENT

**[Purposes]**

If a combination of a main board and PU is changed, the LD power adjustment and adjustment for disc judgment needs to be made for a new combination of the main board and PU since the adjusted LD-power value becomes inappropriate for the new combination and stable playback and recording to disc becomes impossible.

**[Tools to be used]**

GGF1381 : Service Remote Control Unit
GGV1054 : CD-ROM (CDT-313)
GGV1036 : DVD-ROM DL (DVDT-002)
GGV1278 : Blank DVD-R (That's DR-C12WTY5PA)
GGV1282 : Blank DVD-RW (JVC VD-W120XH5)
GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S)

**[Notes]** Never turn the power off while any of the following operations is in progress:
- While laser diode (LD) power adjustment is being performed normally by the unit
- While adjustment for disc judgment is being performed

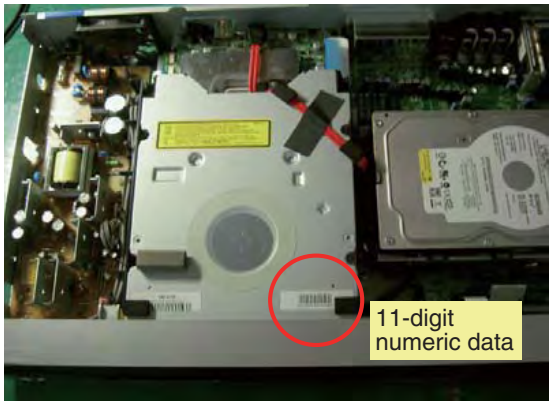
**[Explanation on each adjustment mode]**

- Drive Adjustment Mode

  This mode is used to select each mode for LD power adjustment.
  In this mode, you can confirm an 11-digit number provided for the LD power adjustment.
  The 11-digit number is stored in FLASH (IC200) of the main board.

- PU Data Setting Mode

  This mode is used to enter an 11-digit number provided for the LD power adjustment.
  If you have changed a combination of the main board and PU, enter an 11-digit number marked on the case of a loader which is provided in pairs with PU.
  The LD power adjustment is made by using this 11-digit number.




- Power Adjustment Mode

  This mode is used to execute the LD power adjustment and to check the progress of the adjustment.
  In case an error occurs during the adjustment, you can also check the error details in this mode.

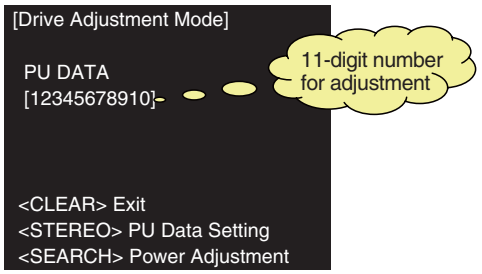
**[How to enter Drive Adjustment Mode]**

To enter the Drive Adjustment Mode, press [ESC]+[CX]+[1]+[0] on the remote control unit for service.

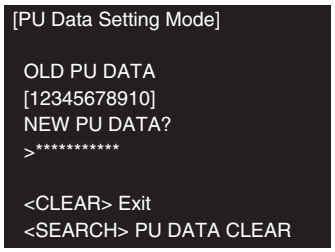
Though the LD power adjustment can be executed irrespective of the product functions, do not operate the product during the LD power adjustment to prevent misadjustment.

## [Operation procedure]

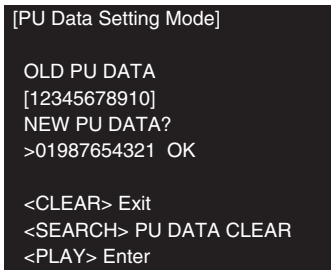
1. When you enter the Drive Adjustment Mode, the following screen is displayed. On this screen, you can check 11-digit numeric data stored in FLASH of MAIN Assy, and can also switch over between each mode.




2. To enter the PU Data Setting Mode, press [STEREO] on the remote control unit for service.
   Entering the PU Data Setting Mode displays the following screen.

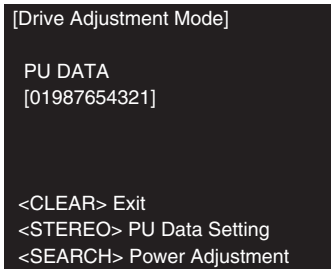



3. By pressing [0] to [9] keys on the remote control unit for service, enter an 11-digit number marked on the case of a loader provided in pairs with PU.
   Entering the 11-digit number displays the following screen.



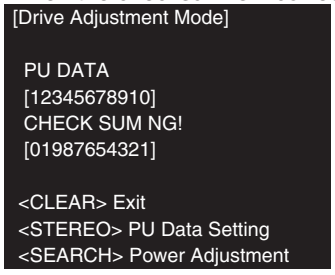

4. To enter the 11-digit number, press [PLAY] on the remote control unit for service.
   The 11-digit number contains 2-digit checksum data to prevent input errors.
   The screens displayed for the correct/incorrect check sum are as follows.

When the checksum is correct



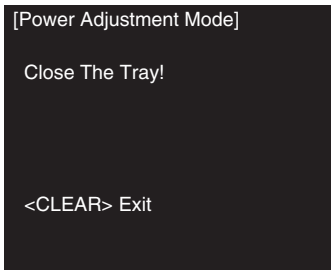

When the checksum is correct
Enter the Power Adjustment Mode and execute the LD power adjustment, as described in 5.

When the checksum is incorrect



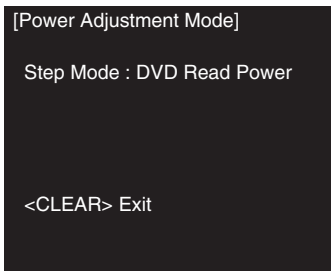

When the checksum is incorrect
The input data may be incorrect.
Return to 2 and enter the PU Data Setting Mode to re-enter the 11-digit number.

5. When the checksum is correct, enter the Power Adjustment Mode and execute the LD power adjustment.
   To enter the Power Adjustment Mode, press [SEARCH] on the remote control unit for service.
   Entering the Power Adjustment Mode displays the following screen and opens the tray automatically.




When the tray does not open
- Check if flexible cables and wire rods are connected properly.
- Errors in the loader, main board, or power source board are suspected.

6. Close the tray manually to execute the LD power adjustment mode.
   You can check the progress of adjustment in the following screen.

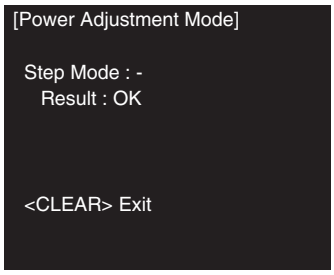



Explanation on Step Mode (time needed)
- DVD Read Power (approx. 10 sec.)
  Adjustment of DVD playback power
- RAM Read Power (approx. 20 sec.)
  Adjustment of RAM playback power
- DVD Write Power (approx. 40 sec.)
  Adjustment of DVD recording power
- CD Read Power (approx. 10 sec.)
  Adjustment of CD playback power
- DVD Disc Judgment (approx. 30 sec.)
  Adjustment for DVD disc judgment
- CD Disc Judgment (approx. 30 sec.)
  Adjustment for CD disc judgment

7. When DVD Disc Judgment is displayed in the Step Mode, the tray opens automatically.
   Place DVDT-002 in the tray. The tray closes after 15 seconds from the time it opened.
   If the adjustment for DVD disc judgment is completed successfully, CD Disc Judgment is displayed in the Step Mode.

If the adjustment for DVD disc judgment is not completed successfully
- A disc other than DVDT-002 may have been placed.
  Place DVDT-002 in the tray.

8. When CD Disc judgment is displayed in the Step Mode, the tray opens automatically.
   Place CDT-313 in the tray. The tray closes after 15 seconds from the time it opened.
   If the adjustment for CD disc judgment is completed successfully, the following screen is displayed.
   Since the judgment is completed successfully, press [CLEAR] on the remote control unit for service and exit from the adjustment mode.

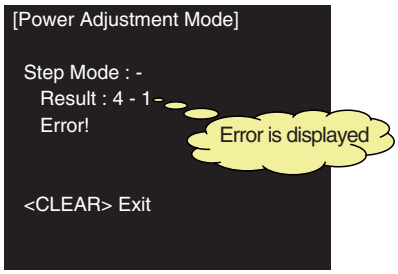



If the adjustment for CD disc judgment is not completed successfully
- A disc other than CDT-313 may have been placed.
  Place CDT-313 in the tray.

9. Turn off the power.

## [Error information]

In case of errors in the Power Adjustment Mode, the following screen is displayed.




About error indication

[Left number]

The left number indicates the Step Mode in which the error has occurred.

- 2: Adjustment of DVD playback power
- 3: Adjustment of RAM playback power
- 4: Adjustment of DVD recording power
- 5: Adjustment of CD playback power
- 6: Adjustment for DVD disc judgment
- 7: Adjustment for CD disc judgment

[Right number]

The right number indicates the error information.

1 or 2: Error in the adjustment process

(Details of error)

- The PU flexible cables may not have been connected.
- TM or main board error is suspected.

3: Forced termination

This number is displayed when you pressed [CLEAR] on the remote control unit for service and executed forced termination.

## [Contents to check]

1. Record the data to a designated disc (DVD-R / DVD-RW / DVD-RAM) in real time.
2. Measure an error rate at a place where recording is executed.
   Measurement method: Refer to the simplified error rate measurement method in the Service Mode.
3. Check that the error rate is 1e-3 or below.

If the error rate is out of specification

- Check if there is any defect or fingerprint on the disc. If you find any problem with the disc, change the disc and try the check again.
- The power adjustment may have been unsuccessful.
  Try the power adjustment again.

If the above two do not solve the problem, a defect with MAIN Assy or PU is suspected.

# 8.3 CPRM ID NUMBER AND DATA SETTING

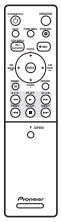
**[Purposes]**

For the DVD recorder,it is necessary with the recoding/playback of DVD-RW disc to set an individual number (ID number) and ID data to each recorder. If the number and data are not set correctly with the following procedure, cannot work with residual quantity 0:00 or operations in the future may not be guaranteed with RW disc. You will find the ID number to be set on the ID label on the rear panel.

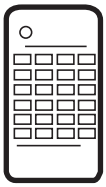
**The Input is Necessary When:**

- " CPRM ERR" is displayed on the FL display immediately after the power is turned on or in Stop mode.
- When the MAIN ASSY or the HDD is exchanged.

**[Tools to be used]**



Remote control unit supplied with the unit (VXX3223)



Remote control unit for servicing (GGF1381)

DVD Recorder Data Disc (Type 2)

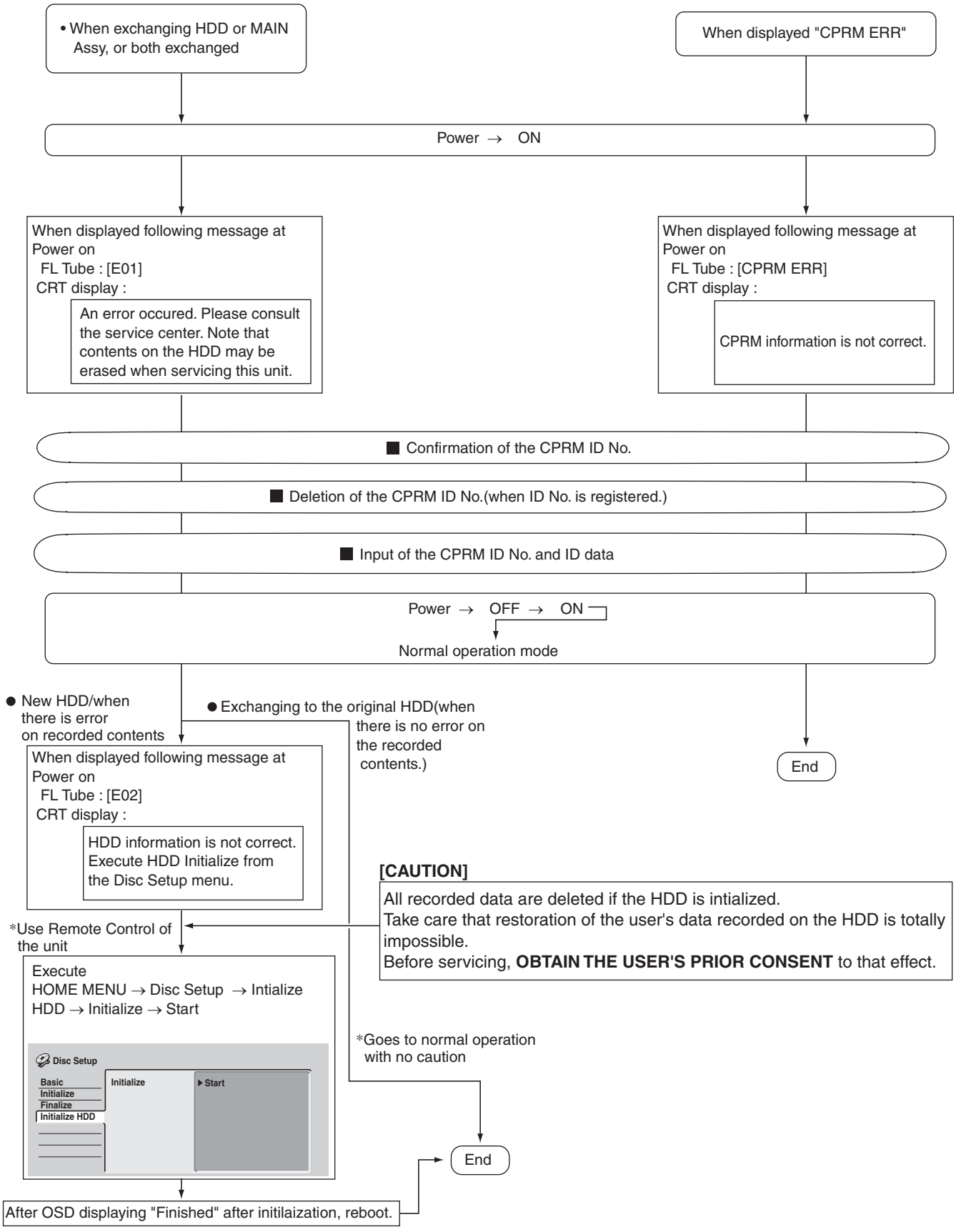
Be sure to use the latest disc (Type 2).
In Feb, 2007, the latest disc is GGV1305.

**[Notes]**

**Important:** If no ID label is found on the rear panel, write down the specified ID number by checking it according to "How to confirm the ID number" shown below.

- Input the ID number while the unit is in Stop mode.
- After the data are read from the data disc (Type 2), the disc will automatically be unloaded.

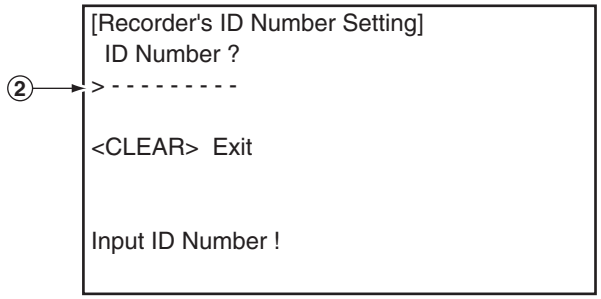
## ◆ Input Flow of the ID No. and ID Data When Exchanging HDD or MAIN Assy


• When exchanging HDD or MAIN Assy, or both exchanged
When displayed "CPRM ERR"
Power → ON
When displayed following message at Power on
FL Tube : [E01]
CRT display :
An error occured. Please consult the service center. Note that contents on the HDD may be erased when servicing this unit.
When displayed following message at Power on
FL Tube : [CPRM ERR]
CRT display :
CPRM information is not correct.
■ Confirmation of the CPRM ID No.
■ Deletion of the CPRM ID No.(when ID No. is registered.)
■ Input of the CPRM ID No. and ID data
Power → OFF → ON
Normal operation mode
● New HDD/when there is error on recorded contents
● Exchanging to the original HDD(when there is no error on the recorded contents.)
End
When displayed following message at Power on
FL Tube : [E02]
CRT display :
HDD information is not correct. Execute HDD Initialize from the Disc Setup menu.
[CAUTION]
All recorded data are deleted if the HDD is intialized.
Take care that restoration of the user's data recorded on the HDD is totally impossible.
Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
*Use Remote Control of the unit
Execute
HOME MENU → Disc Setup → Intialize
HDD → Initialize → Start
Disc Setup
Basic
Initialize
Finalize
Initialize HDD
Initialize
Start
*Goes to normal operation with no caution
End
After OSD displaying "Finished" after initilaization, reboot.

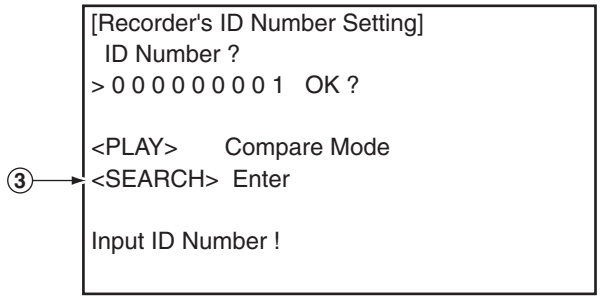
## ◆How to Input the ID Number and ID Data

① To enter the input mode, press ESC + STEREO keys sequentially in a status with no ID number set, such as after FLASH-ROM downloading.

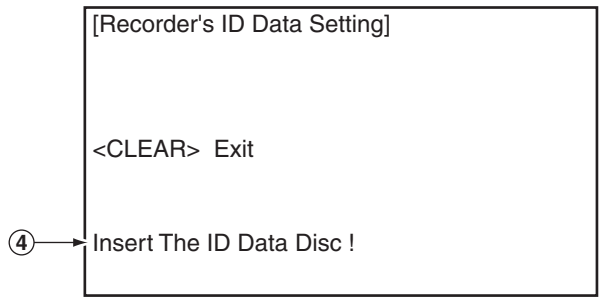
② As number input is enabled when the unit enters the input mode, input the 9-digit ID number.
(The entered number is also displayed on the FL display.)



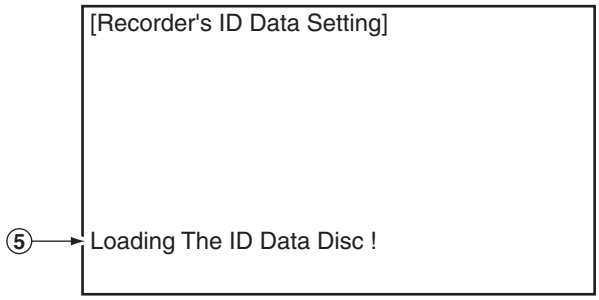

③ After inputting the number, press SEARCH keys to register the ID number.



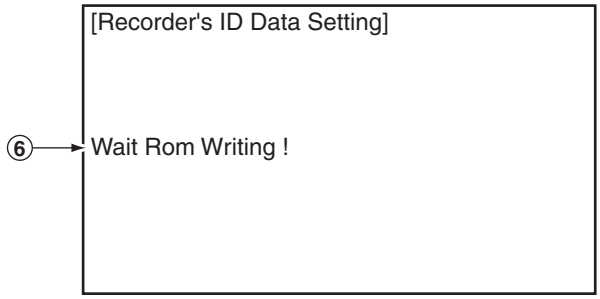

④ When the ID number has been registered, the unit enters the ID data input mode. (The FL display indicates "INSERT ID.")
In this condition, place the ID data disc on the tray and close the tray using the CLOSE key "■/⏏" on the player.




⑤ While the data are being read, the message shown in the figure at left is displayed on the screen.
(The FL display indicates "LOAD ID.")

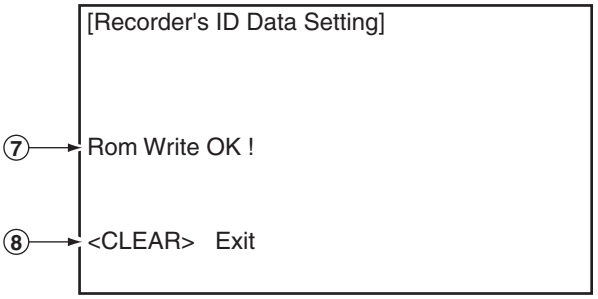



⑥ When the ID data have been read, the data are written to the FLASH-ROM.
(The FL display indicates "WRITE ID.")




⑦ When the ID data have been written to the FLASH-ROM, the message "Rom Write OK" is displayed on the screen.
(The FL display indicates "ID OK.")

⑧ After confirming this message, press CLEAR key to exit the input mode.

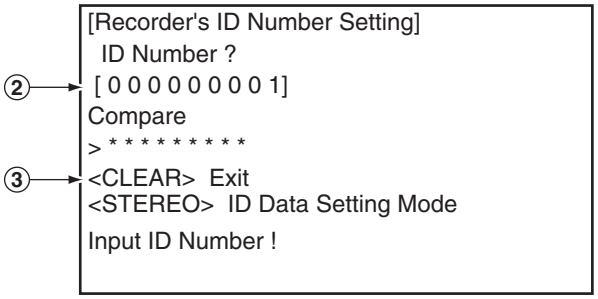


## [How to Confirm the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② The set ID number is displayed on the screen (and on the FL display), permitting you to confirm it.

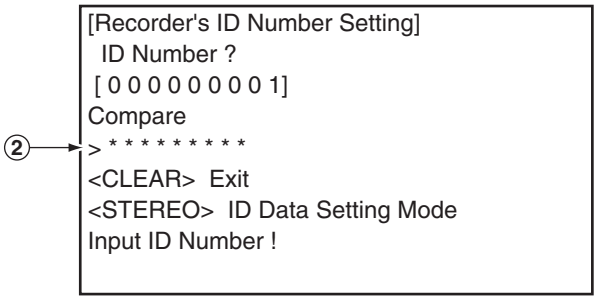
③ To exit this mode, press CLEAR key.



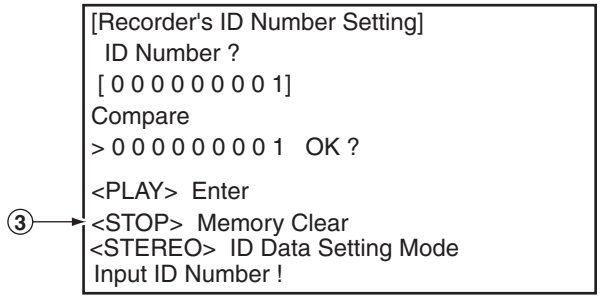

## [How to Clear the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② Input the same number as the ID number you have set.




③ After inputting the number, press STOP key.
Only when the entered number matches the set ID number, the ID number is cleared and the unit exits this mode.
If the numbers do not match, you must return to step ②.
(STOP key is not accepted until 9 digits are entered.)



# 8.4 FIRMWARE UPDATE METHOD

**[Purposes]**

1. When the main board is replaced, the firmware versions for the system control computer, drive, and the TUFL microcomputer do not match, and operations of the unit may be destabilized.
   To match the versions for the above three, firmware downloading is necessary in the following two cases:
   ① After the model setting
   ② When NG is displayed on the first screen (version information, etc.) of Service mode
   ③ After changing MAIN Assy or TURB Assy

2. Rewriting the firmware to the latest version may ameliorate the symptoms claimed by the customer.

There are the following two methods for update: disc update and serial update

## ◆ Disc Update

**[Tools to be used]**

Remote control unit for servicing (GGF1381)

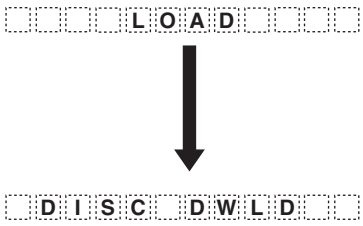
Update DISC

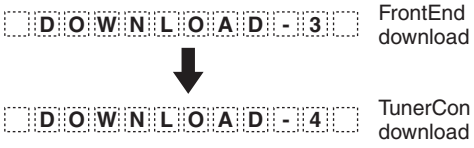
**[Notes]**

Be sure NOT to turn off the unit during update.
If the unit is turned off during update, the SYSCON, TUNERCON, DRIVE programs may not be properly rewritten, in which case the unit may not be able to initialize itself normally when turned on again.

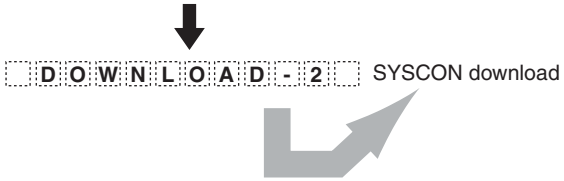
**[Procedure]** ① Open a disc tray by pressing the "OPEN/CLOSE" button.
② Put the update disc on the tray. Press a " OPEN/CLOSE " button while pressing a "Record Stop" button on the frontpanel.
* The disc tray closes automatically and the disc is loaded.
* The disc tray opens automatically after loading.

FL display




③ Take out the Download Disc.




* After update is completed, the power turns off, and a disc tray closes automatically.
* It takes for about 7-8 minutes until update is completed.

④ The power turns on and press a " ESC " button, then press " DISP " button on the remote control unit for servicing.
⑤ Confirm a firmware release version.
⑥ Press " ESC " button on the remote control unit for servicing in order to exit the test mode.

**[Tips]**

(1) If the power is not correctly turned on or when the power is shut off during update, proceed as follows before performing update again:

- In a case where update was incorrectly terminated while "DOWNLOAD-2" was displayed on the FL display:
  The SYSCON program will not function correctly.
  If the program cannot be update from the disc or through serial communication, replace the MAIN Assy.

- In a case where update was incorrectly terminated while "DOWNLOAD-3" was displayed on the FL display:
  The DRIVE program will not function correctly.
  If the program cannot be update from the disc, replace the MAIN Assy.

- In a case where update was incorrectly terminated while "DOWNLOAD-4" was displayed on the FL display
  The program for the tuner microcomputer will not function correctly.
  If the program cannot be update from the disc, replace the TUNERCON microcomputer (IC101 : TURB Assy).

## ◆Serial Update

**[Purposes]**

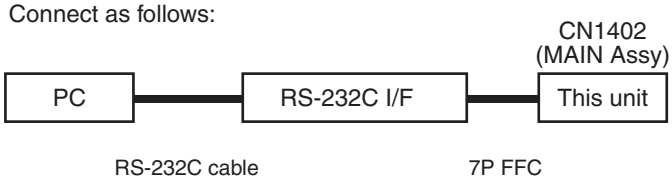
1. This method is used when disc update fails.

**[Tools to be used]**

* PC with serial port
* RS-232C straight cable
* RS-232C I/F jig (GGF1348)
* 7P FFC (VDA1681)
* Update program (UFU.exe)
* Firmware

**[Connection]**

Connect as follows:




**[Procedures]**

① Connect the 232C I/F jigs above way.

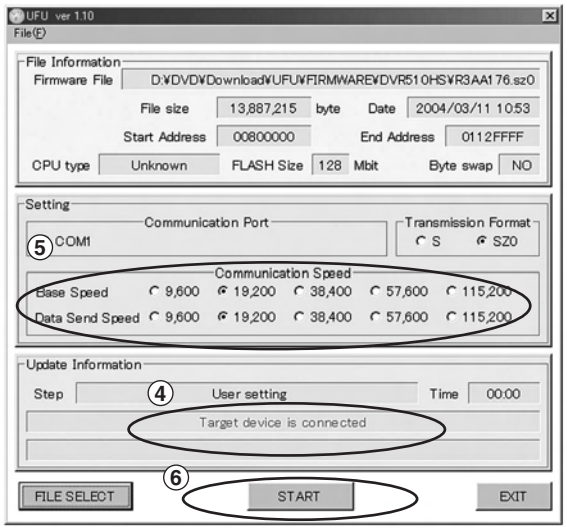
② Turn on the PC and start the " UFU.exe ".

③ Select the Firmware file. ("sz0" file)

④ Turn the DVD recorder on and start the update program.
" Target Device is connected " is appeared on the screen.

⑤ Select the Communication Speed (Baud Rate)
a) Base Speed 115,200
b) Data Send Speed 115,200

⑥ START
- Even if you click "START" button, sometimes "Communication Error" may come out one to twice, and update may fail.
  In this case, please click "START" again.
- Other factors can be considerd if update fails 3 times or more.
- And it takes about 20 minutes for updating the firmware.

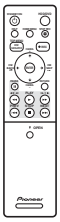


# 8.5 VIDEO ADJUSTMENT FOR SPECIFIC AREA

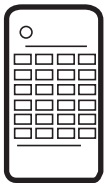
**[Purposes]**

Depending on the area, if a flicker may appear in a picture received by the tuner, it can be corrected or reduced with this setting.

**[Tools to be used]**



Remote control unit supplied with the unit (VXX3223)



Remote control unit for servicing (GGF1381)

## ◆ Specific-Channel Setting Mode

In this mode, specific settings can be made for up to 12 channels.
For channels that do not have specific settings, the settings of General Setting mode are applied.

**[How to enter this mode]**

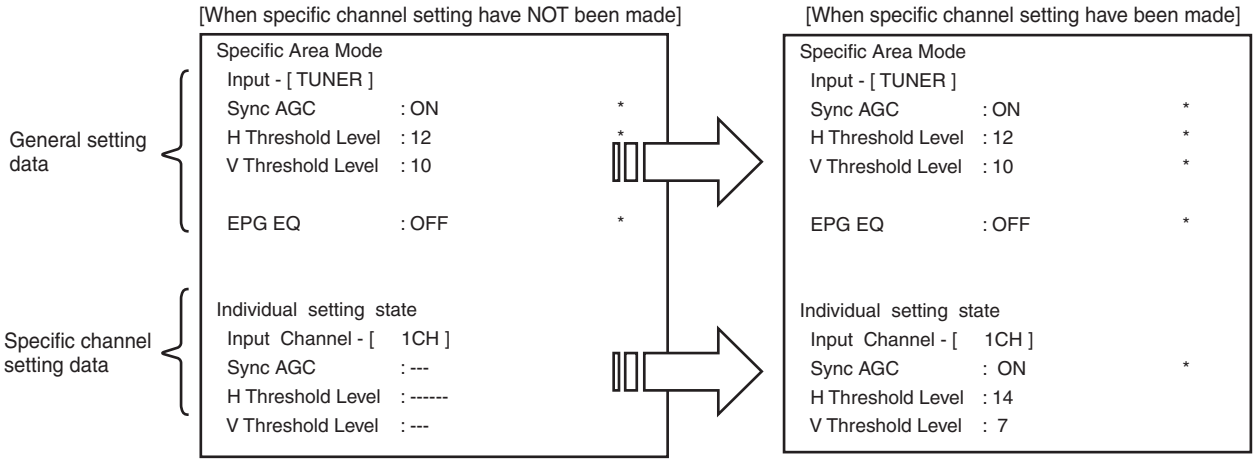
① Select a channel or line input (L1-L3) on which a specific setting is to be made.
② Press the ESC then CHP/TIM keys on the remote control unit for servicing. "General Setting mode" is displayed.
③ Press the DIG/ANA key in General Setting mode. Specific-Channel Setting mode is entered.

**[How to exit]** Press the ESC key on the remote control unit for servicing to return the Normal mode.

**[Note]** Setting is in effect only during recording/playback stop.

**[Setting examples]**

The setting examples in Specific-Channel Setting mode are shown below.
For details on each setting item, see "Table 1: Key operations in Specific-Area Setting mode."


[When specific channel setting have NOT been made]
[When specific channel setting have been made]
General setting data
Specific channel setting data
Specific Area Mode
Input - [ TUNER ]
Sync AGC : ON *
H Threshold Level : 12 *
V Threshold Level : 10
EPG EQ : OFF *
Individual setting state
Input Channel - [ 1CH ]
Sync AGC : ---
H Threshold Level : ------
V Threshold Level : ---
Specific Area Mode
Input - [ TUNER ]
Sync AGC : ON *
H Threshold Level : 12 *
V Threshold Level : 10 *
EPG EQ : OFF *
Individual setting state
Input Channel - [ 1CH ]
Sync AGC : ON *
H Threshold Level : 14
V Threshold Level : 7

**[Tips]**

- If a channel that does not have specific settings is displayed, the setting figures are displayed as hyphens (- -).
- If the setting figures are not displayed as hyphens, those settings have been specifically set even if they are identical to the default settings or those of General Setting mode.
- The setting indicated with an asterisk (*) is the default.
- The channels to be indicated for "Input Channel" are as shown below:
  Line inputs: L1-L3, DV (DV is not valid for specific-area settings.)
  Tuner channels: Channels received by the tuner (channels to be set in Specific-Channel Setting mode, etc.)

**[Tips]**

- Indication when the maximum number (12) of channels have individual settings
  If a channel that does not have specific settings is currently selected, the indication will be as shown below, and individual data items cannot be set for that channel. To set individual data items for the currently selected channel, you must clear any specific-channel settings for one or more channels.

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON      *
  H Threshold Level : 12      *
  V Threshold Level : 10      *

  EPG EQ            : OFF     *

Individual setting state
  Sorry !
  You can store only 12 channels
  for Specific Area mode.
```

[H Threshold Level]
The slice level setting for the horizontal(H)-sync separation circuit can be changed. By your changing the slice level, horizontal sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[V Threshold Level]
The slice level setting for the vertical(V)-sync separation circuit can be changed. By your changing the slice level, vertical sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[Receiver sensitivity setting for an electronic program guide (EPG)]
The sensitivity when receiving an electronic program guide can be selected. Set the sensitivity to "High" only if reception is unstable.

## ◆ General Setting Mode

**[How to enter this mode]**

- To shift from Specific-Channel Setting mode:
  Each time the DIG/ANA key is pressed, Specific-Channel Setting mode and General Setting mode are alternately selected.

- To shift from Normal mode (recording/playback stop):
  Press the ESC then CHP/TIM keys.

**[How to exit]** Press the ESC key to return the normal mode.

**[Setting examples]**

Show setting example on the General Setting mode screen to the following.
Regarding setting of actual each item, refer to table 1 (key operations in specific-area setting mode).

[General Setting mode screen]

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON      *
  H ThresholdLevel  : 12      *
  V Threshold Level : 10      *

  EPG EQ            : OFF     *
```

*: Setting is the default.

[Display in General Setting mode when the channel currently displayed has specific settings]

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON      *
  H ThresholdLevel  : 12      *
  V Threshold Level : 10      *

  EPG EQ            : OFF     *

This channel is set up
  individually.
```

**[Tips]**

- General Setting mode can be entered only during recording/playback stop.
- The currently selected input mode (TUNER or LINE) is displayed for "Input."
- If L1, L2, L3, or DV is selected for input, general settings for the line input can be made (DV is not valid for specific-area settings), and if TUNER is selected, general settings for the tuner input can be made.

**Table 1: key operations in specific-Area setting mode (1/2)**

Key operations in Specific Area Setting mode of the remote control units are shown in the table below (the keys are of the remote control unit for servicing unless otherwise stated):

| Key | Operation | Switching (*: Default) | Remarks | Used in Specific-Channel Setting mode | Used in General Setting mode |
|---|---|---|---|---|---|
| [ DIG/ANA ] | Switches General setting mode and Specific setting mode. | – | – | ○ | ○ |
| [INPUT SELECT], [CHANNEL +/-] (Remote control unit supplied with this unit) | Switches inputs or channels. | – | – | ○ | ○ |
| [ SIDE A ] , [ SIDE B ] | Sets SyncAGC. | ON(*) / OFF | ON : The sync level is set to an appropriate value.<br>OFF : Cancel the Sync AGC. | ○ | ○ |
| [ Rev ×3 ], [ ×3 Fwd ] | Sets H Threshold. | 0 – 15 (Default : 12) | [ Rev ×3 ] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation)<br>[ ×3 Fwd ] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation) | ○ | ○ |
| [ Rev CHAPTER SKIP ] [ CHAPTER SKIP Fwd ] | Sets V Threshold Level. | 0 – 15 (Default : 10) | [ Rev CHAPTER SKIP ] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation)<br>[ CHAPTER SKIP Fwd ] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation) | ○ | ○ |

**Table 1: key operations in specific-Area setting mode (2/2)**

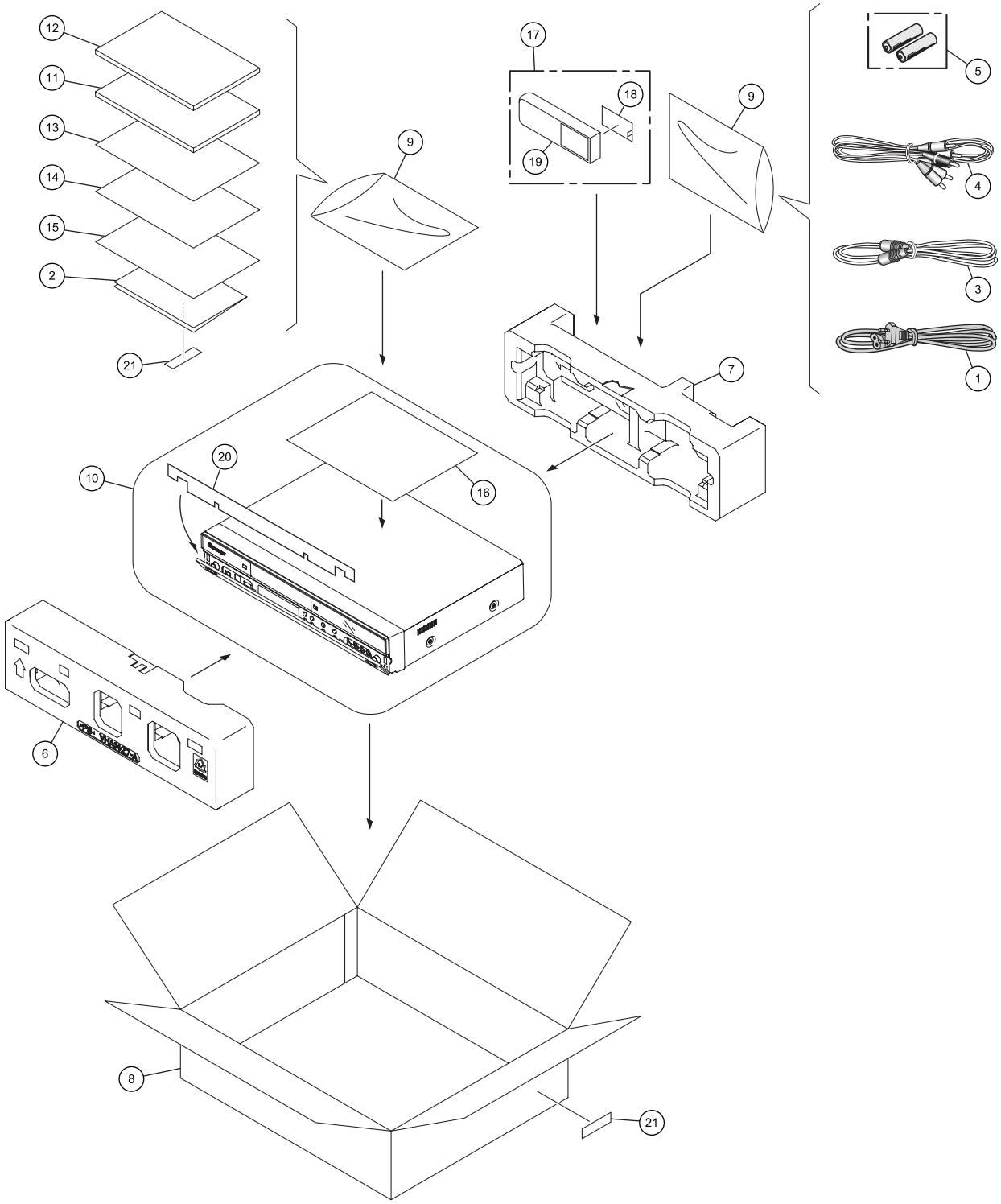
| Key | Operation | Switching (*: Default) | Remarks | Used in Specific-Channel Setting mode | Used in General Setting mode |
|---|---|---|---|---|---|
| [ PLAY ] | All channels that have specific setting data will be canceled, and the specific data will be initialized. | – | The General Setting data will not be changed. | ○ | × |
| [ CLEAR ] | Specific-Channel Setting mode:<br>If the currently selected channel has its specific setting, that setting will be canceled. (By canceling the specific setting for that channel, the number of remaining channels that can have specific settings will be increased by one.)<br>General Setting mode:<br>Settings of General Setting mode are initialized. | – | Specific-Channel Setting mode:<br>All specific data are initialized.<br>The General Setting data will not be changed.<br><br>General Setting mode:<br>All general setting data are reset to default.<br>The specific setting data will not be changed (will be retained). | ○ | ○ |
| [ PAUSE ] | The specific-channel-setting data for the currently selected channel are reset to default. | – | The General Setting data will not be changed (will be retained). | ○ | × |
| [ ESC ] | To quit Setting mode for a specific area and clear the on-screen display. | – | – | ○ | ○ |

**Notes:**
• Each key listed in Table 1 above is active only while the tuner is completely stopped.
• The setting values will not be reset to default even if resetting to the state at the time of shipment is performed.

# 9. EXPLODED VIEWS AND PARTS LIST

*NOTES:*
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

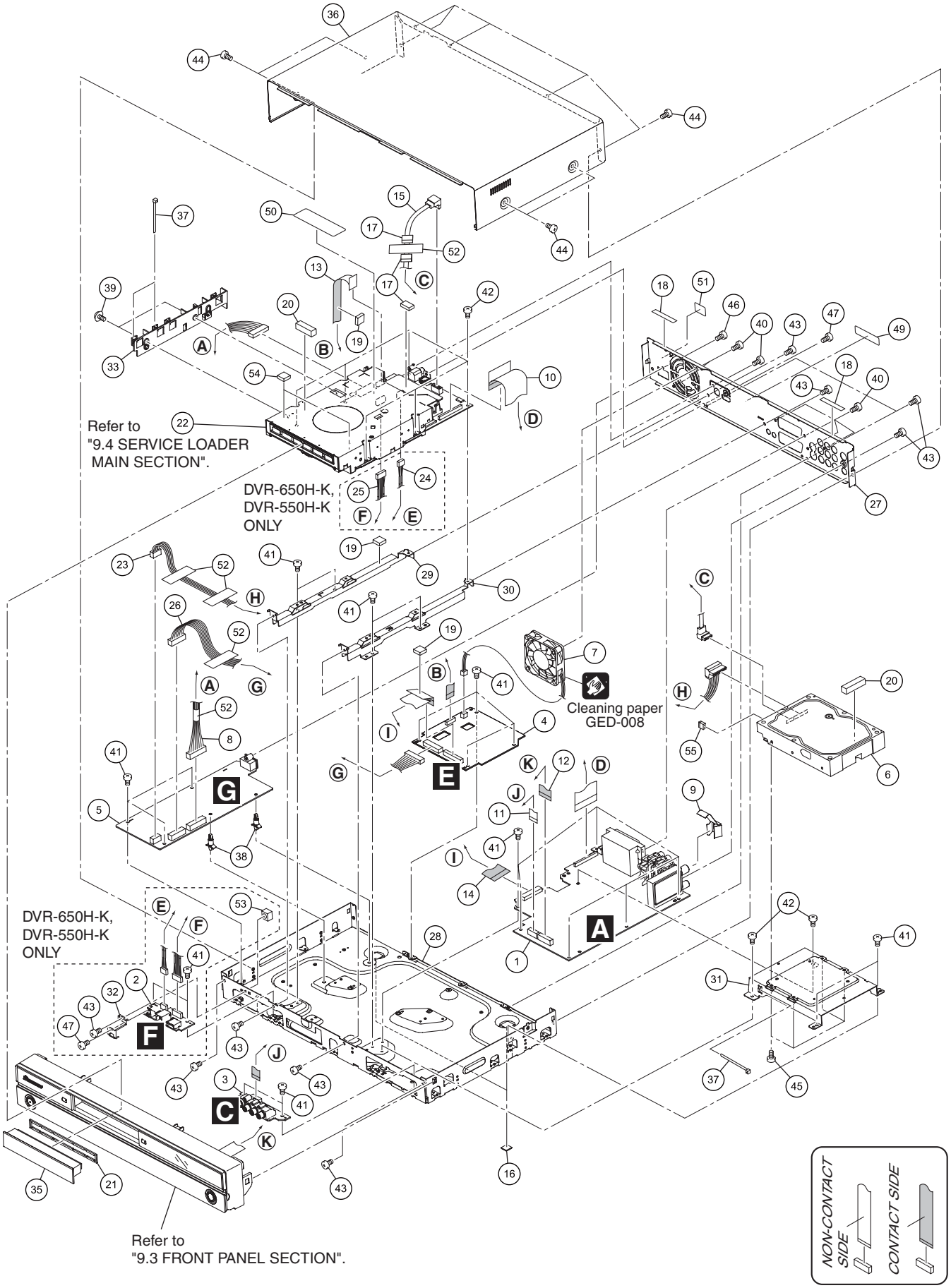
## 9.1 PACKING



## (1) PACKING SECTION PARTS LIST

| Mark | No. | Description | Part No. |
|---|---|---|---|
| ⚠ | 1 | Power Cable | ADG7021 |
| NSP | 2 | Warranty Card | ARY7045 |
| | 3 | RF Antenna Cable | VDE1088 |
| | 4 | Audio / Video Cable (1.5m) (red/white/yellow) | VDE1077 |
| NSP | 5 | Dry Cell Batteries (AA/R6P) | VEM1010 |
| | 6 | Front Pad | VHA1427 |
| | 7 | Rear Pad | VHA1428 |
| | 8 | Packing Case (DVR-650H-K) | VHG2839 |
| | 8 | Packing Case (DVR-550H-K) | VHG2807 |
| | 8 | Packing Case (DVR-450H-S) | VHG2808 |
| | 9 | Polyethylene Bag | VHL1088 |
| | 10 | Mirror Sheet | VHL1095 |
| | 11 | Operating Instructions (English) | VRB1462 |
| | 12 | Operating Instructions (French) | VRC1382 |
| | 13 | Quick Start Guide (English) | VRG1021 |
| | 14 | Quick Start Guide (French) | VRG1022 |
| | 15 | HDD Caution 8L | VRR1071 |
| | 16 | HDD Caution 8L B | VRR1076 |
| | 17 | Remote Control | VXX3223 |
| | 18 | Battery Cover | VZN1004 |
| | 19 | Top Cover | VZN1022 |
| | 20 | Sheet | VHL1117 |
| NSP | 21 | Serial Label S | VRW2188 |

# 9.2 EXTERIOR SECTION



## (1) EXTERIOR SECTION PARTS LIST

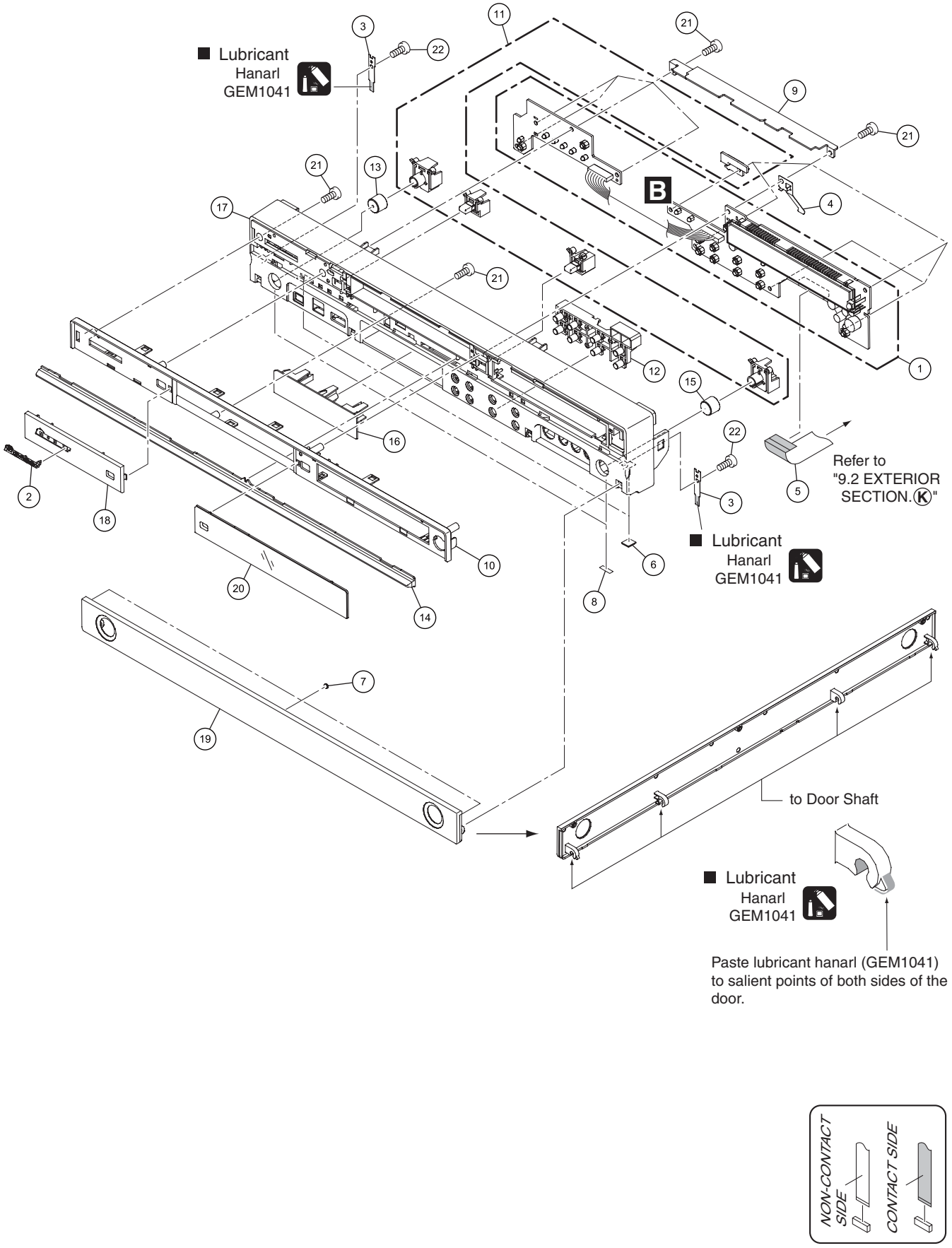
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | SERVICE TURB Assy | VXX3251 |
| | 2 | SERVICE DVUB Assy | See Contrast table (2) |
| | 3 | SERVICE FRJB Assy | VXX3227 |
| | 4 | VDEC Assy | VWV2304 |
| ⚠ | 5 | POWER SUPPLY Assy | VWR1408 |
| | 6 | HDD | See Contrast table (2) |
| | 7 | DC Fan Motor 60 | VXM1125 |
| | 8 | Connector Assy | PF13PP-S17 |
| | 9 | Eath Plate TU | VBK1173 |
| | 10 | Flexible Cable 40P | VDA2159 |
| | 11 | Flexible Cable 11P | VDA2162 |
| | 12 | Flexible Cable 17P | VDA2163 |
| | 13 | Flexible Cable 28P | VDA2164 |
| | 14 | Flexible Cable 24P | VDA2165 |
| | 15 | SATA Cable | VDX1016 |
| | 16 | Rubber Foot | VEB1349 |
| | 17 | Rubber Spacer | VEB1378 |
| | 18 | Cushion | VEB1401 |
| | 19 | Rubber Spacer | VEB1398 |
| | 20 | Gasket 30x10T | VEC2522 |
| | 21 | Tray Sheet | VEC2551 |
| | 22 | ••••• | |
| | 23 | Housing Assy 4P | VKP2389 |
| | 24 | Housing Assy 6P | See Contrast table (2) |
| | 25 | Housing Assy 10P | See Contrast table (2) |
| | 26 | Housing Assy 12P | VKP2397 |
| | 27 | Rear Panel | See Contrast table (2) |
| NSP | 28 | Base Chassis | VNB1057 |
| NSP | 29 | Writer Stay L | VNE2448 |
| NSP | 30 | Writer Stay R | VNE2449 |
| NSP | 31 | HDD Stay | VNE2450 |
| | 32 | DV Angle | See Contrast table (2) |
| | 33 | Cord Holder | VNL1971 |
| | 34 | ••••• | |
| | 35 | Tray Panel | VXA2866 |
| | 36 | Bonnet Case S | See Contrast table (2) |
| NSP | 37 | Binder (BK-1) | ZCA-BK1 |
| | 38 | PCB Support | AEC1215 |
| | 39 | Screw | AMZ30P060FTC |
| | 40 | Screw | BPZ30P080FTC |
| | 41 | Screw | BSR30P060FTC |
| | 42 | Screw | BSR30P080FTB |
| | 43 | Screw | BSZ30P040FTC |
| | 44 | Screw | See Contrast table (2) |
| | 45 | Screw #6-32 | DBA1125 |
| | 46 | Screw | PBZ30P080FTC |
| | 47 | Screw | VBA1088 |
| | 48 | ••••• | |
| NSP | 49 | Serial Label S | VRW2188 |
| | 50 | Laser Caution Label | VRW2262 |
| NSP | 51 | ID Label Assy | VXW1015 |
| NSP | 52 | Tape | ZTA-3800A-12 |
| | 53 | Screw Guard | See Contrast table (2) |
| | 54 | Spacer Cushion | VEB1400 |
| | 55 | Jumper Connector | See Contrast table (2) |
| NSP | 56 | Service Loader Main | See Contrast table (2) |

## (2) CONTRAST TABLE

DVR-650H-K/KCXV, DVR-550H-K/KCXV and DVR-450H-S/KCXV are constructed the same except for the following :

| Mark | No. | Symbol and Description | DVR-650H-K/ KCXV | DVR-550H-K/ KCXV | DVR-450H-S/ KCXV |
|---|---|---|---|---|---|
| | 2 | SERVICE DVUB Assy | VXX3231 | VXX3231 | Not used |
| | 6 | HDD | VXF1131 | VXF1137 | VXF1137 |
| | 24 | Housing Assy 6P | VKP2390 | VKP2390 | Not used |
| | 25 | Housing Assy 10P | VKP2391 | VKP2391 | Not used |
| | 27 | Rear Panel | VNA3022 | VNA2995 | VNA2993 |
| | 32 | DV Angle | VNE2453 | VNE2453 | Not used |
| | 36 | Bonnet Case S | VXX3250 | VXX3250 | VXX3238 |
| | 44 | Screw | BSZ30P060FBN | BSZ30P060FBN | BSZ30P040FTC |
| | 53 | Screw Guard | VEB1399 | VEB1399 | Not used |
| | 55 | Jumper Connector | Not used | VKX1021 | VKX1021 |
| NSP | 56 | Service Loader Main | VXU1011 | VXU1011 | VXU1009 |

# 9.3 FRONT PANEL SECTION



## (1) FRONT PANEL SECTION PARTS LIST

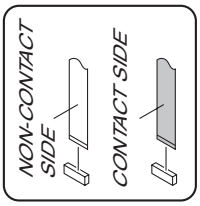
| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | SERVICE FLKY Assy | VXX3226 |
| | 2 | PIONEER Badge | See Contrast table (2) |
| | 3 | Door Spring | VBK1175 |
| | 4 | Earth Plate FLKY | VBK1176 |
| | 5 | Flexible Cable 17P | VDA2163 |
| | 6 | Rubber Foot | VEB1349 |
| | 7 | Rubber Sheet | VEB1396 |
| | 8 | Door Cushion | VEC2561 |
| | 9 | FP Bridge | VNE2464 |
| | 10 | Panel Frame | VNK6149 |
| | 11 | Main Key | VNK6162 |
| | 12 | Function Key | See Contrast table (2) |
| | 13 | Key Top PW | See Contrast table (2) |
| | 14 | Center Lens | VNK6168 |
| | 15 | Key Top REC | See Contrast table (2) |
| | 16 | CI Cover | See Contrast table (2) |
| | 17 | Front Panel | See Contrast table (2) |
| | 18 | Sub Panel | VXA2865 |
| | 19 | Door | See Contrast table (2) |
| | 20 | FL Lens | See Contrast table (2) |
| | 21 | Screw | BPZ30P080FTC |
| | 22 | Flat Head Screw | VBA1113 |

## (2) CONTRAST TABLE

DVR-650H-K/KCXV, DVR-550H-K/KCXV and DVR-450H-S/KCXV are constructed the same except for the following :

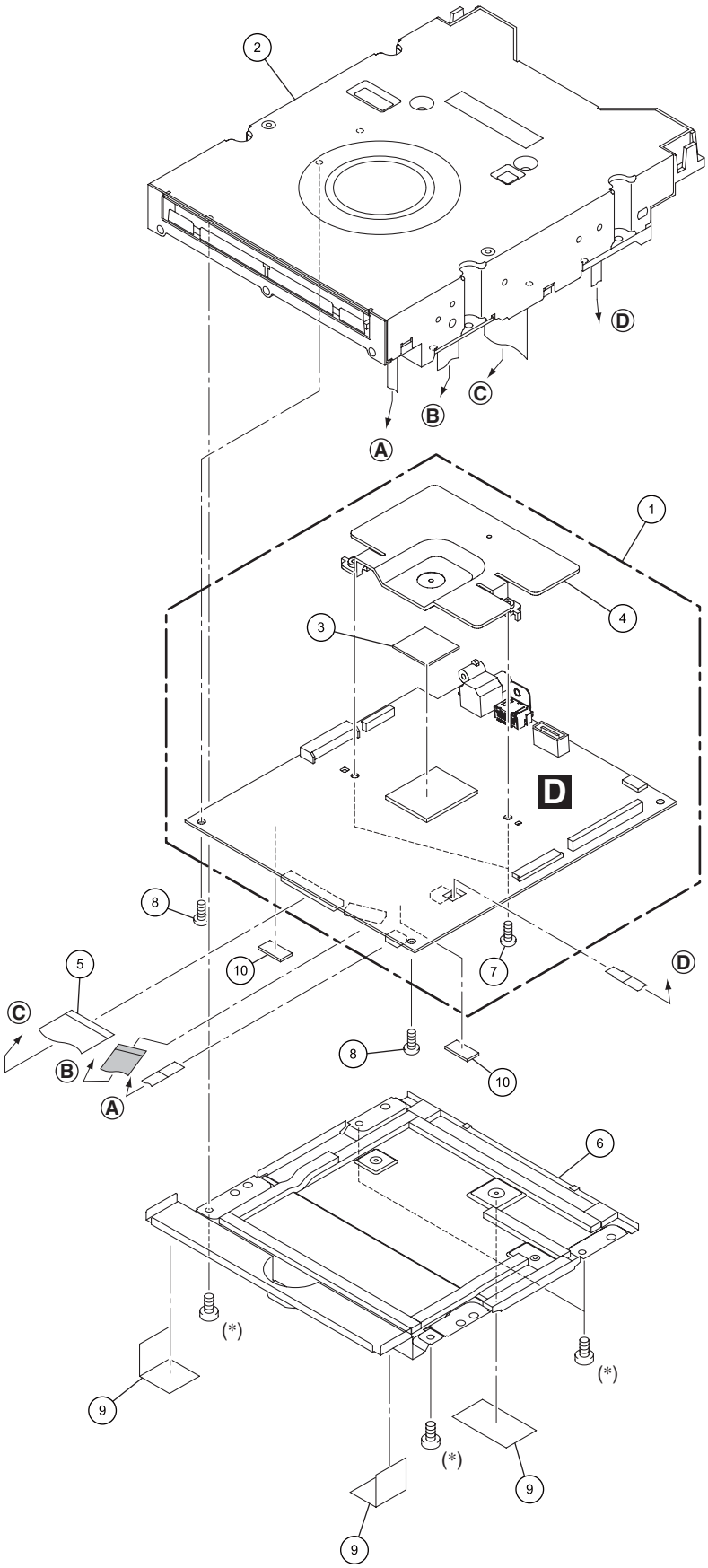
| Mark | No. | Symbol and Description | DVR-650H-K/ KCXV | DVR-550H-K/ KCXV | DVR-450H-S/ KCXV |
|---|---|---|---|---|---|
| | 2 | PIONEER Badge | VAM1153 | VAM1153 | VAM1148 |
| | 12 | Function Key | VNK6164 | VNK6164 | VNK6163 |
| | 13 | Key Top PW | VNK6239 | VNK6239 | VNK6166 |
| | 15 | Key Top REC | VNK6240 | VNK6240 | VNK6182 |
| | 16 | CI Cover | VNK6229 | VNK6229 | VNK6188 |
| | 17 | Front Panel | VNK6238 | VNK6238 | VNK6237 |
| | 19 | Door | VXA2879 | VXA2879 | VXA2878 |
| | 20 | FL Lens | VXA2880 | VXA2868 | VXA2877 |

# 9.4 SERVICE LOADER MAIN SECTION




Reuse (*) marked parts when exachanging Service LOADER Assy.

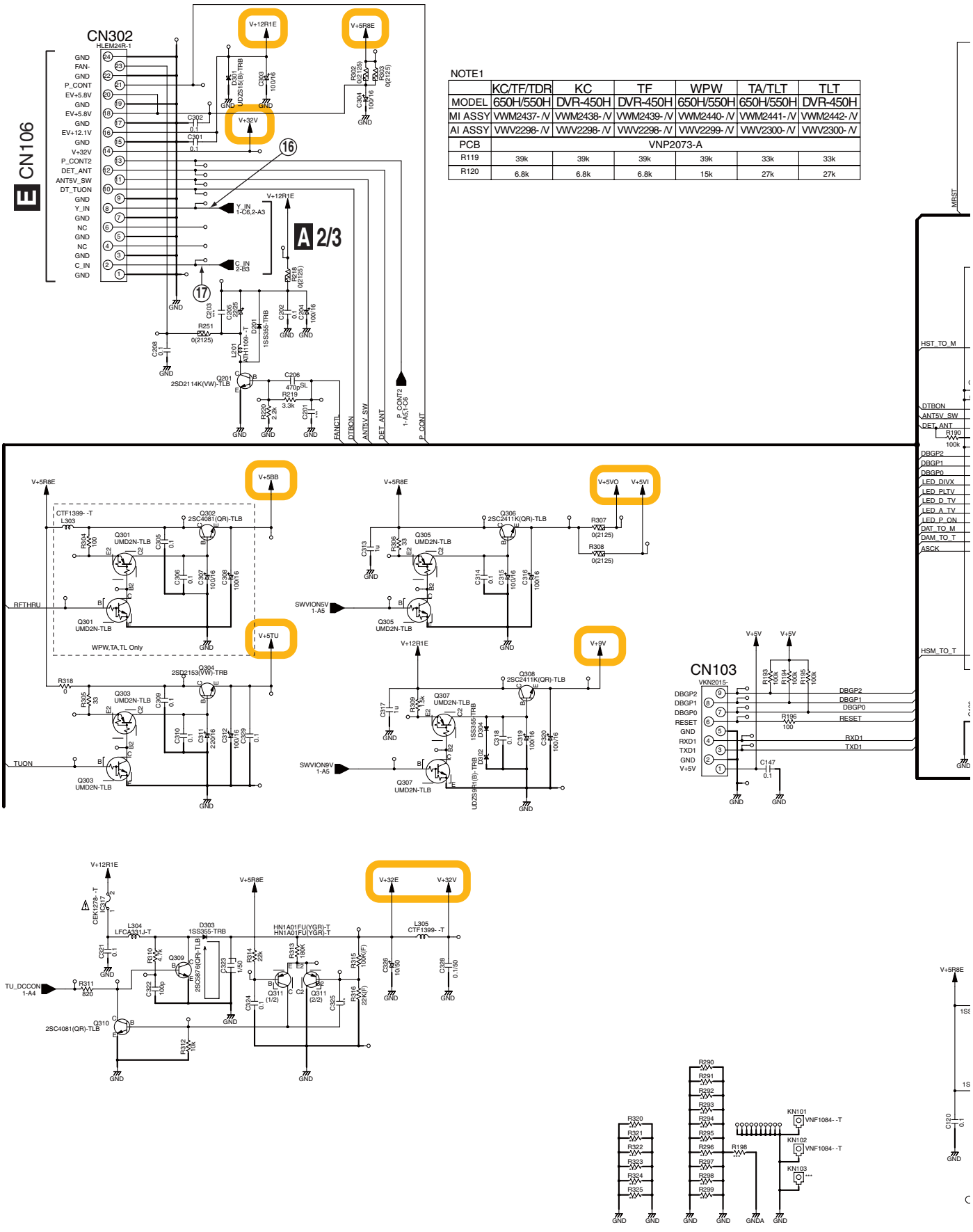
- Case Screw S (DBA1250) x2



## SERVICE LOADER MAIN SECTION PARTS LIST

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | 1 | SERVICE MAIN Assy (DVR-650H-K, DVR-550H-K) | VXX3242 |
| | 1 | SERVICE MAIN Assy (DVR-450H-S) | VXX3240 |
| | 2 | Service Loader Assy | VXX3239 |
| | 3 | Radiation Sheet (Silicon) | VEB1360 |
| | 4 | Heatsink | VNH1079 |
| | 5 | FFC U11 | DDX1208 |
| | 6 | Low Case U11 | DNC1761 |
| | 7 | Screw | BBZ30P060FTC |
| | 8 | Screw | DBA1220 |
| NSP | 9 | Tape | ••••• |
| | 10 | Silicon Sheet R9B | DEB1726 |

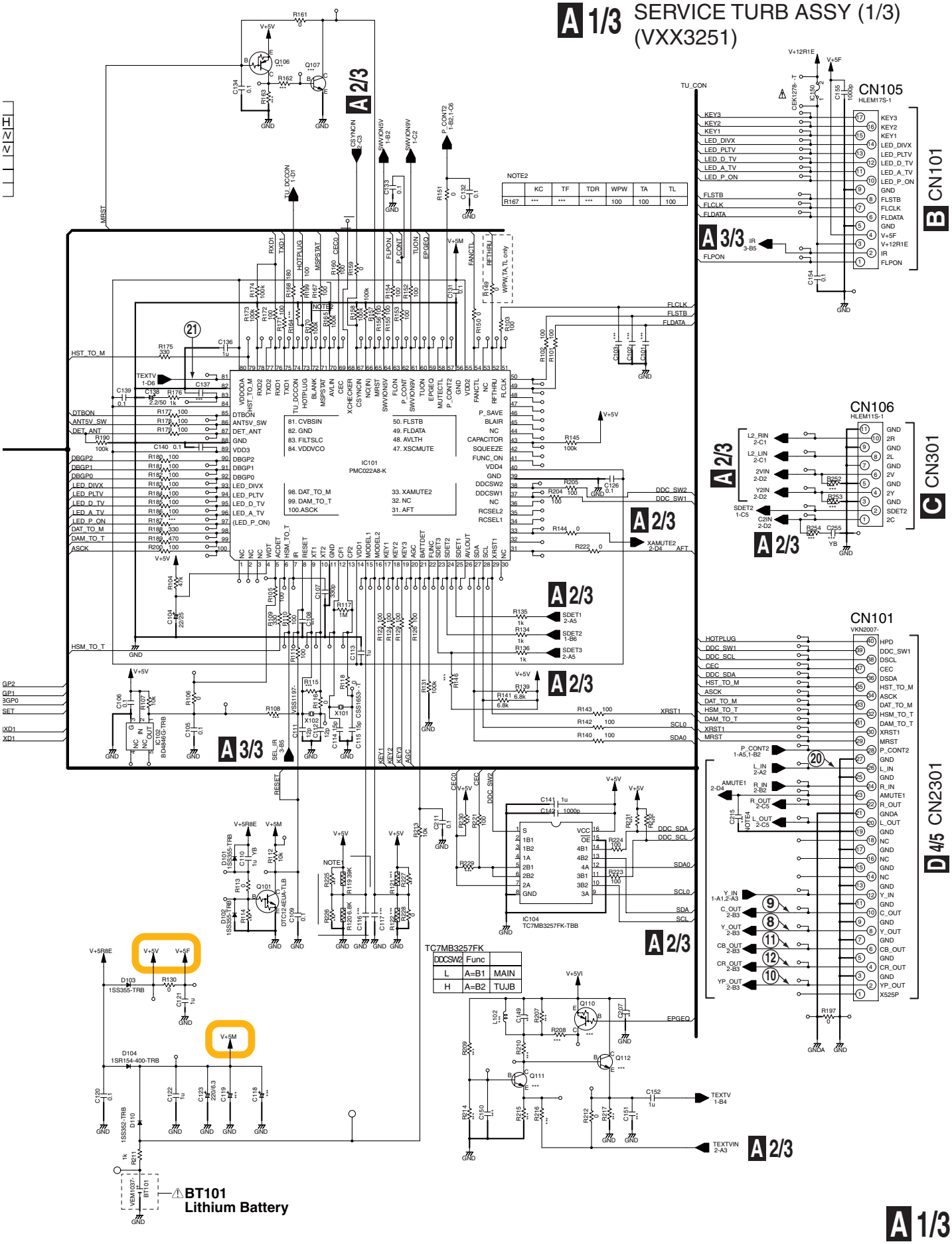
# 10. SCHEMATIC DIAGRAM
## 10.1 SERVICE TURB ASSY (1/3)




NOTE1

| | KC/TF/TDR | KC | TF | WPW | TA/TLT | TLT |
|---|---|---|---|---|---|---|
| MODEL | 650H/550H | DVR-450H | DVR-450H | 650H/550H | 650H/550H | DVR-450H |
| MI ASSY | VWM2437- /V | VWM2438- /V | VWM2439- /V | VWM2440- /V | VWM2441- /V | VWM2442- /V |
| AI ASSY | VWV2298- /V | VWV2298- /V | VWV2298- /V | VWV2299- /V | VWV2300- /V | VWV2300- /V |
| PCB | VNP2073-A | | | | | |
| R119 | 39k | 39k | 39k | 39k | 33k | 33k |
| R120 | 6.8k | 6.8k | 6.8k | 15k | 27k | 27k |

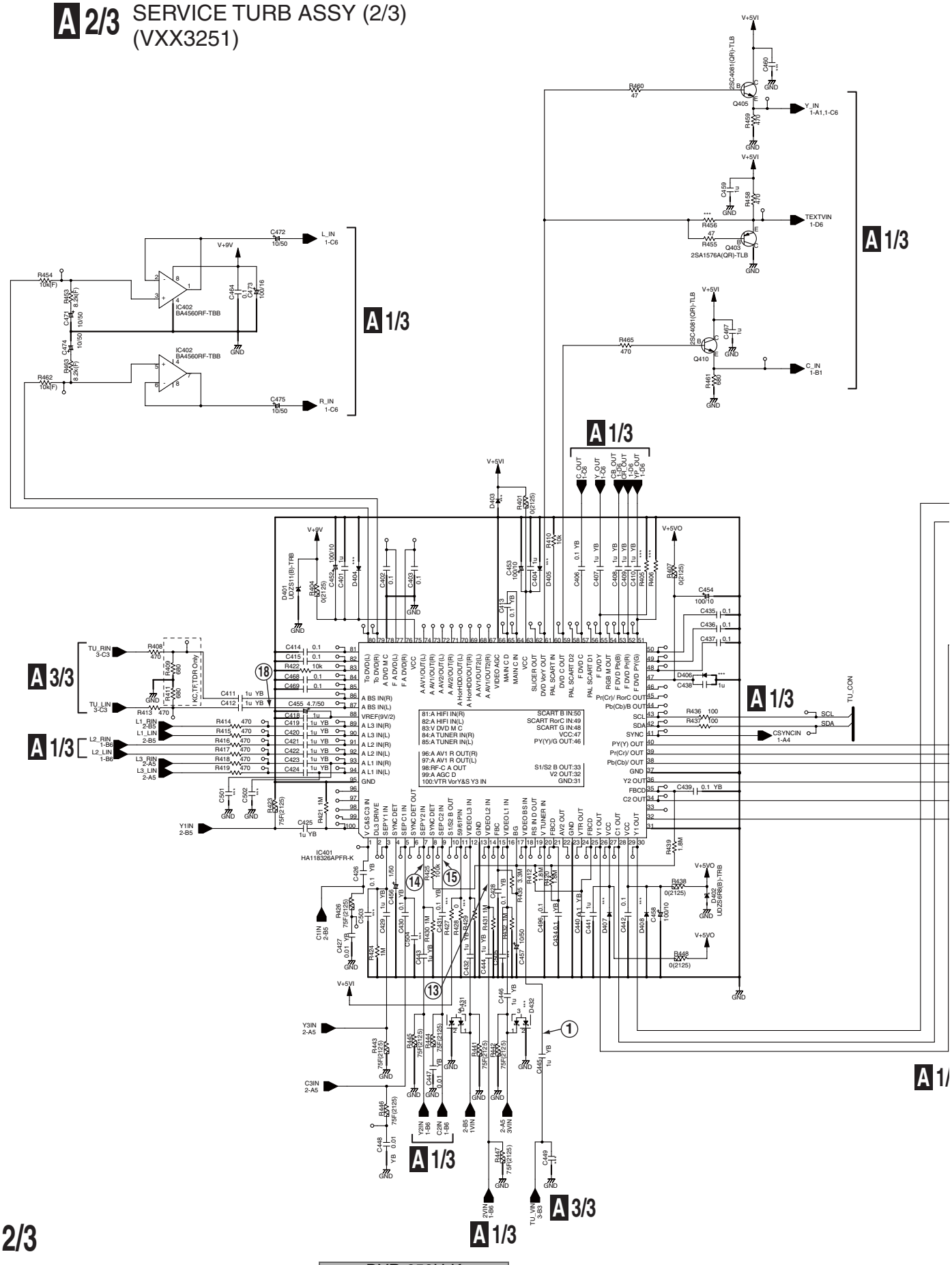
# A 1/3 SERVICE TURB ASSY (1/3) (VXX3251)

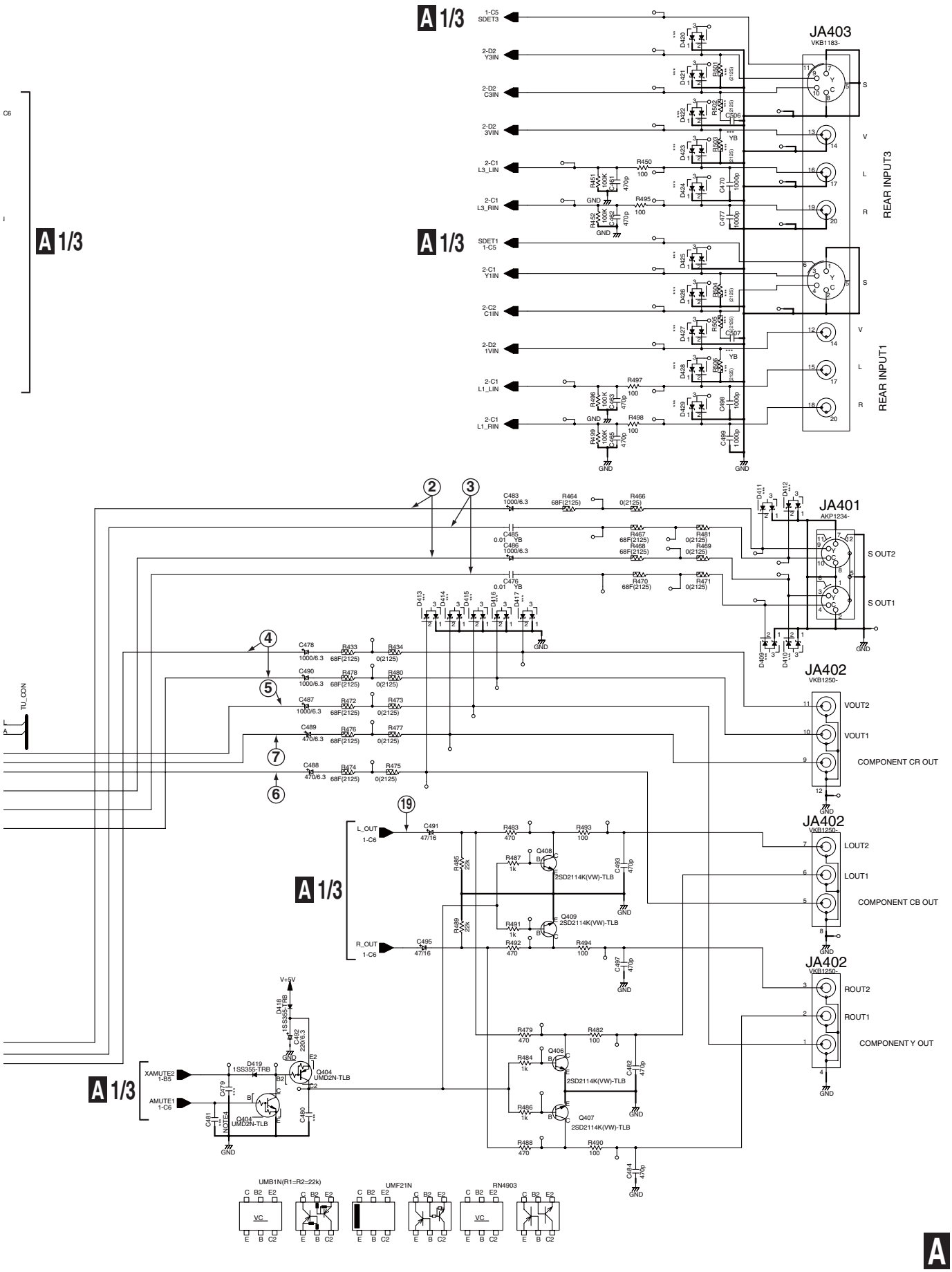



**BT101**
**Lithium Battery**

# 10.2 SERVICE TURB ASSY (2/3)

A 2/3 SERVICE TURB ASSY (2/3)
(VXX3251)

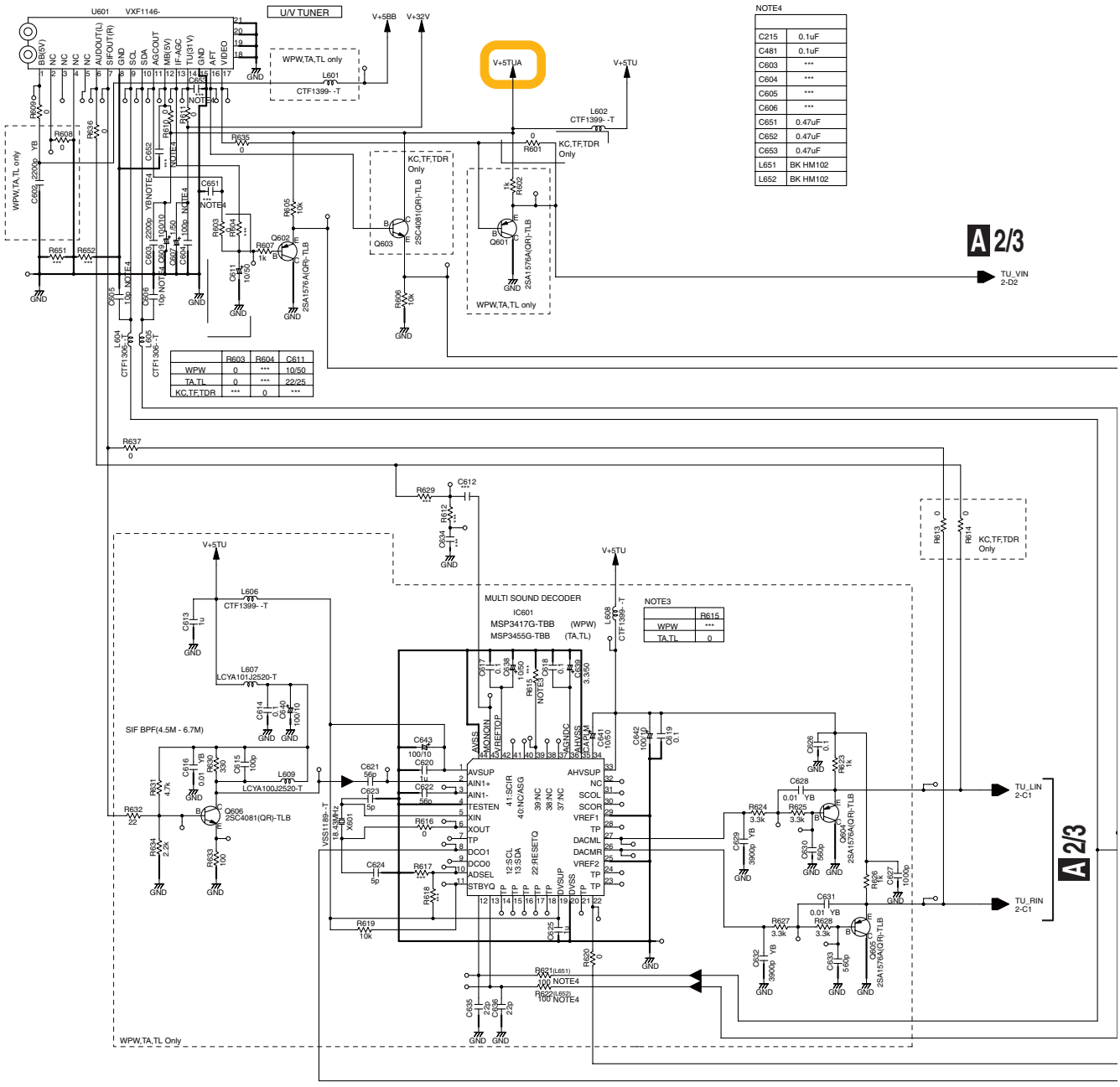



A 1/3
JA403
VKB1183-
REAR INPUT3
REAR INPUT1
JA401
AKP1234-
S OUT2
S OUT1
JA402
VKB1250-
VOUT2
VOUT1
COMPONENT CR OUT
LOUT2
LOUT1
COMPONENT CB OUT
ROUT2
ROUT1
COMPONENT Y OUT
TU_CON
L_OUT
R_OUT
XAMUTE2
AMUTE1
Q404
UMD2N-TLB
Q408
Q409
Q406
Q407
2SD2114K(VW)-TLB
UMB1N(R1=R2=22k)
UMF21N
RN4903
A 2/3

# 10.3 SERVICE TURB ASSY (3/3)

## A 3/3 SERVICE TURB ASSY (3/3) (VXX3251)

WPW : VXF1146-
TA,TL: VXF1105- (VXF1061-)
KC,TF,TDR : VXF1103- (VXF1059-)



A 2/3

TU_VIN
2-D2

KC,TF,TDR
Only

TU_LIN
2-C1

A 2/3

TU_RIN
2-C1

TU_CON
AFT
AGC
SDA
SCL
XRST1
MSPSTAT

A 1/3

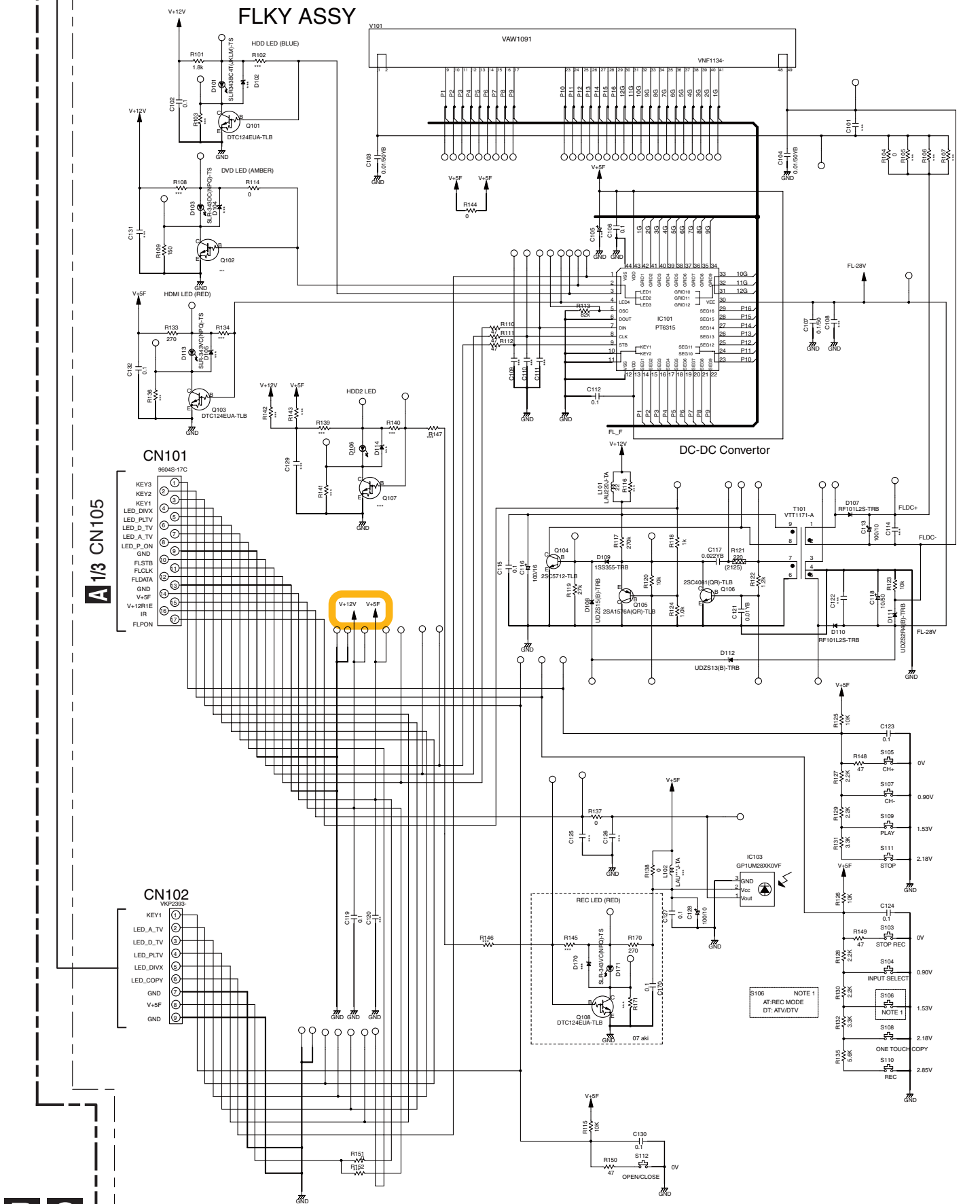
SEL_IR
1-C4

IR
1-A6

V+5V
C701 1u
GND
R701 220k
R703 1k
D701 1SS355-TRB
R702 220
R704 220
JA701 RKN1004-
SR_IN
C702 680p
C703 0.1
GND GND

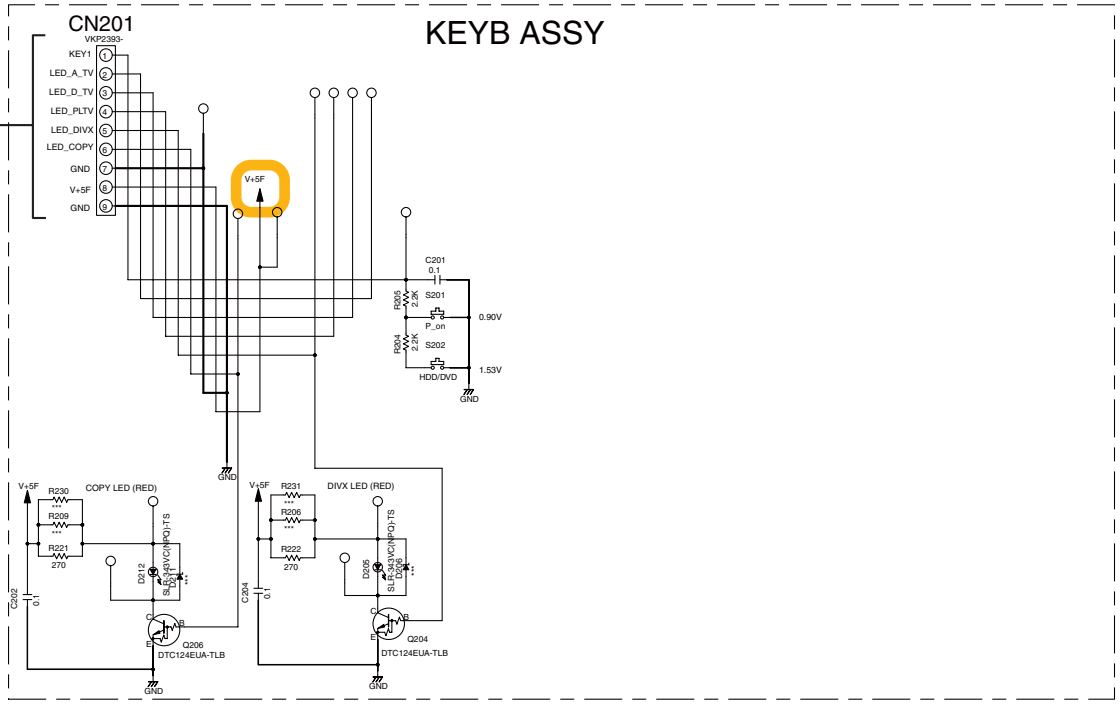
A 3/3

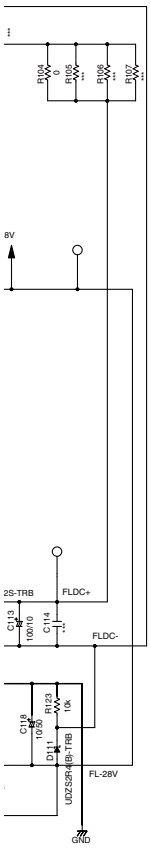
# 10.4 SERVICE FLKY ASSY

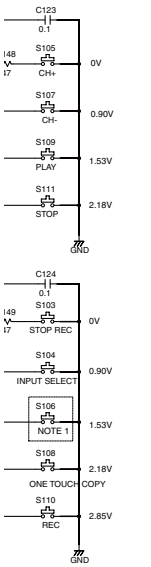


## B SERVICE FLKY ASSY (VXX3226)

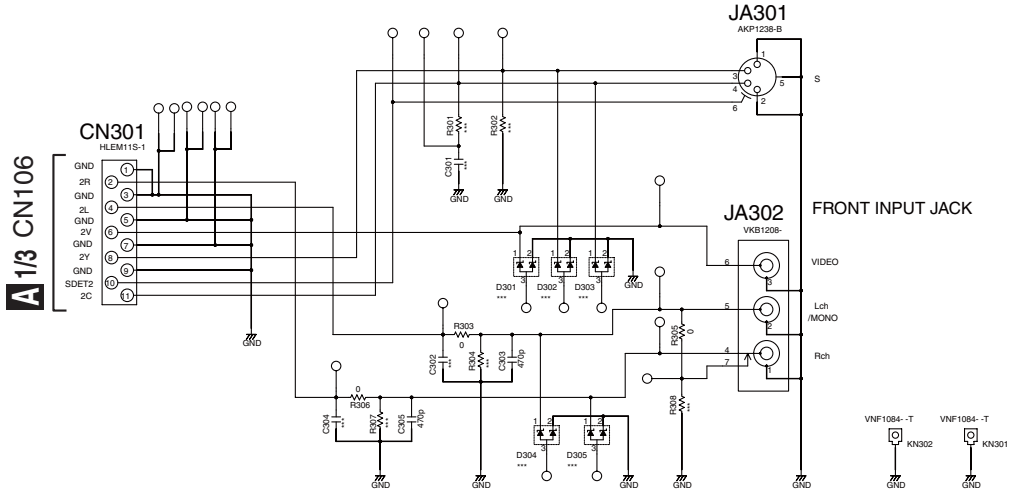
### KEYB ASSY



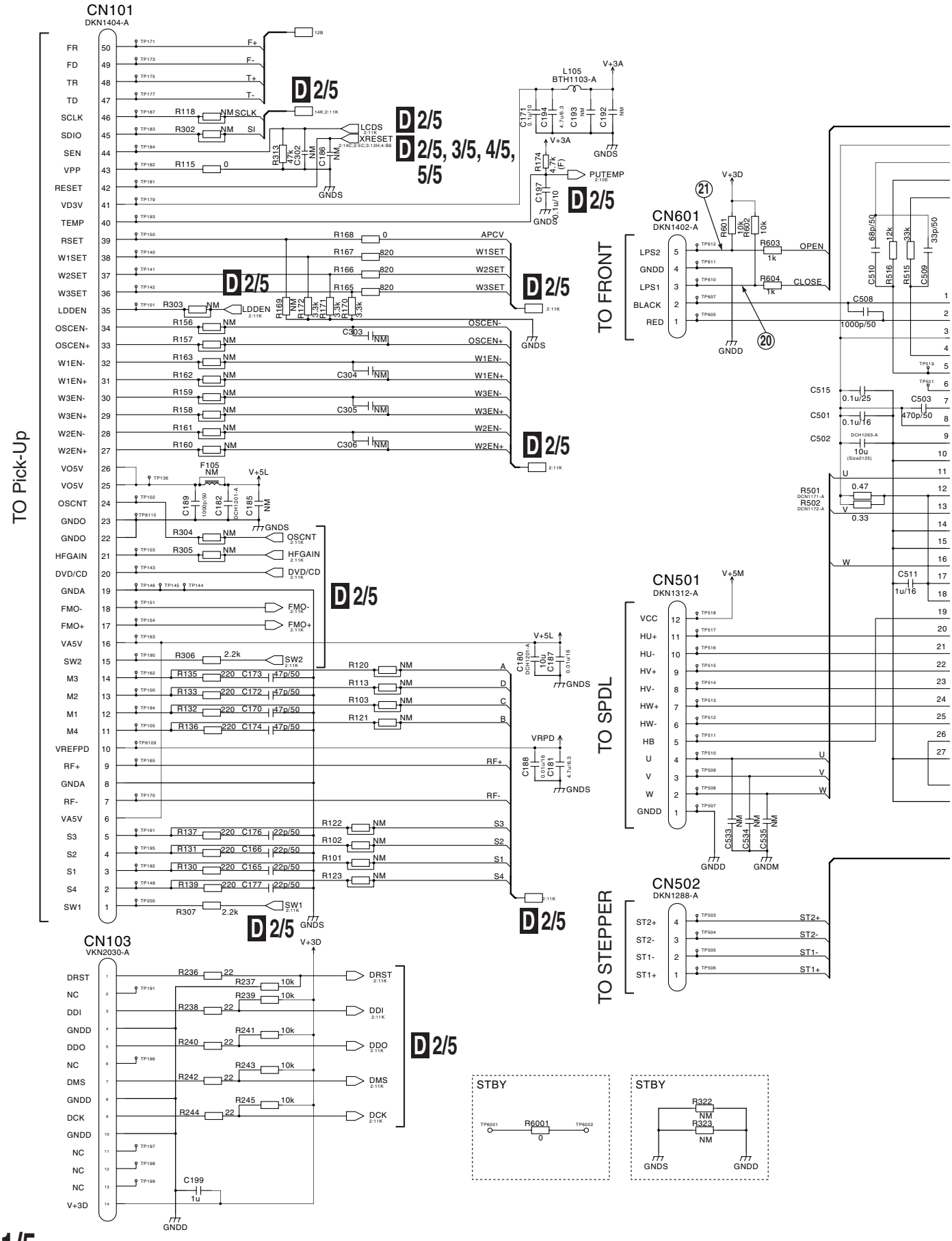



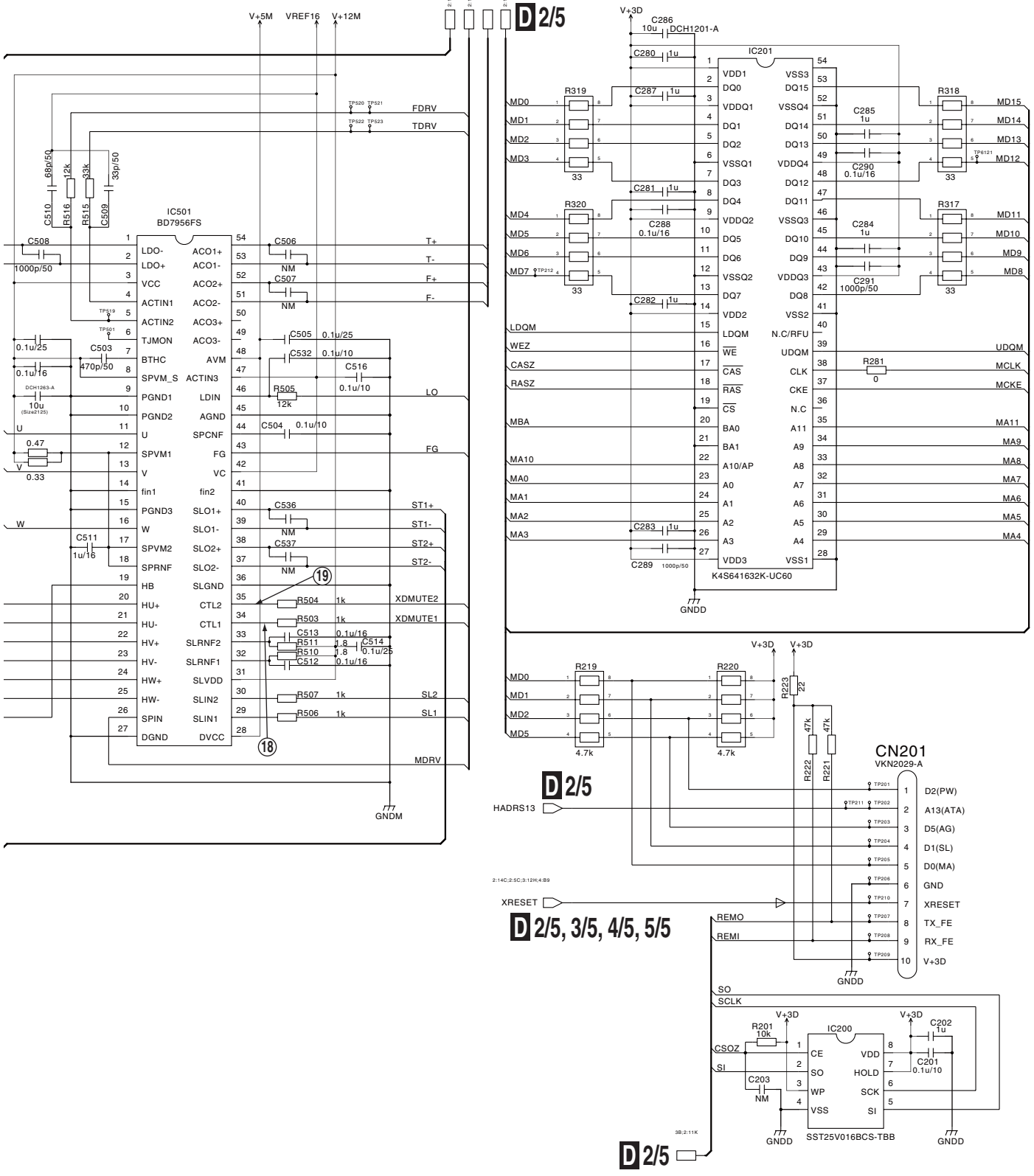

## C SERVICE FRJB ASSY (VXX3227)



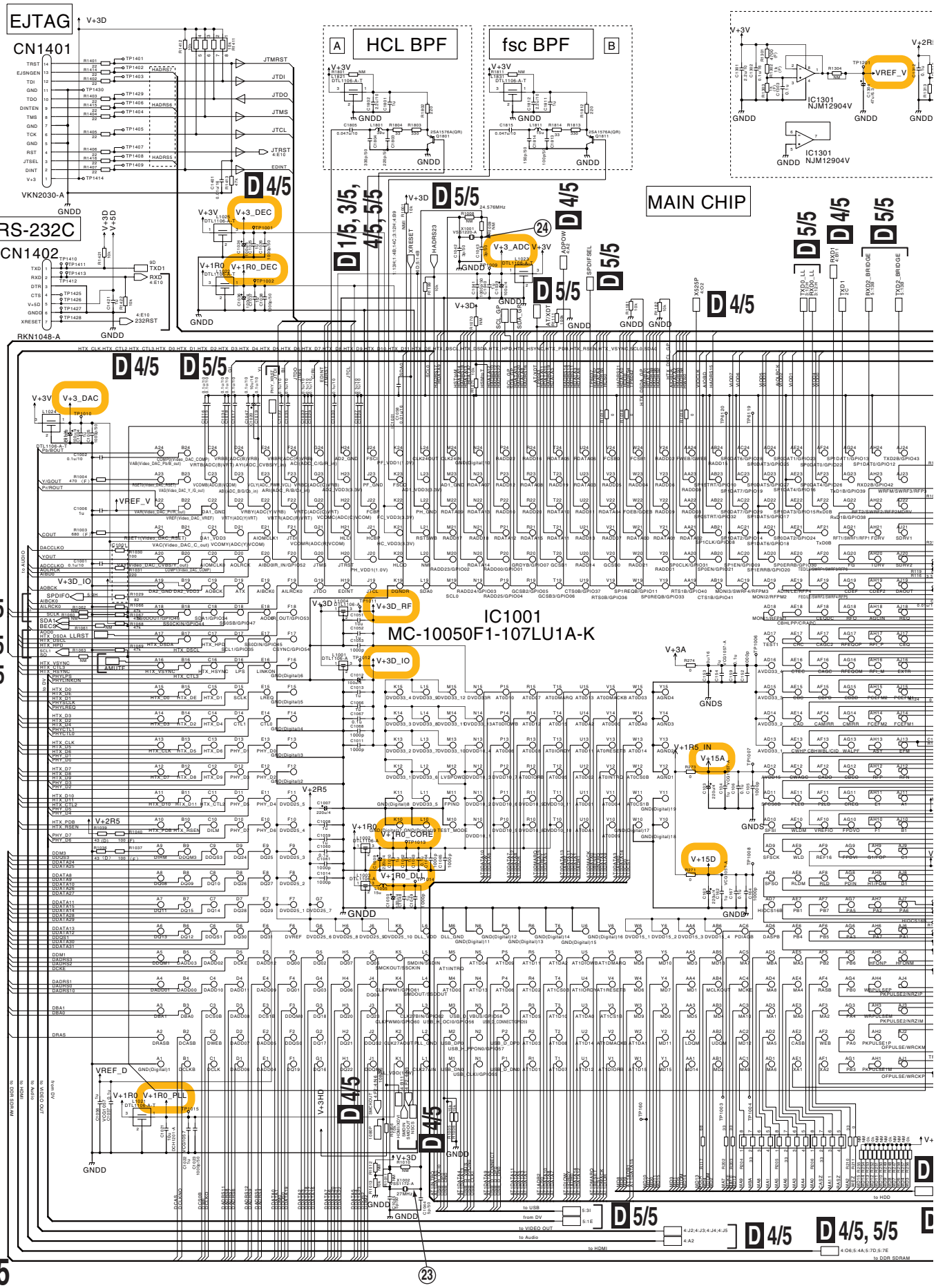
# 10.5 SERVICE MAIN ASSY (1/5)



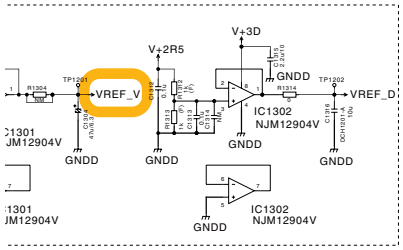
# D 1/5 SERVICE MAIN ASSY (1/5)
## (VXX3242 : DVR-650H-K, DVR-550H-K)
## (VXX3240 : DVR-450H-S)

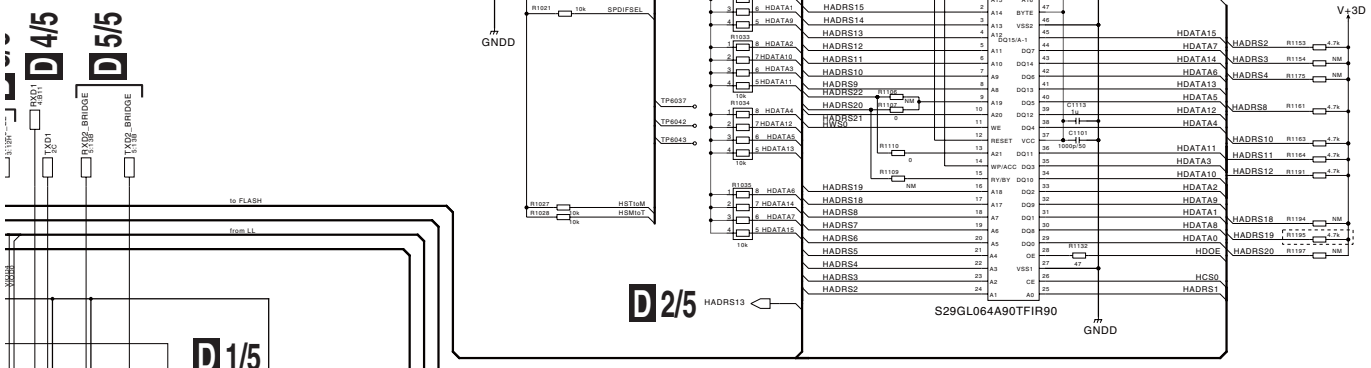


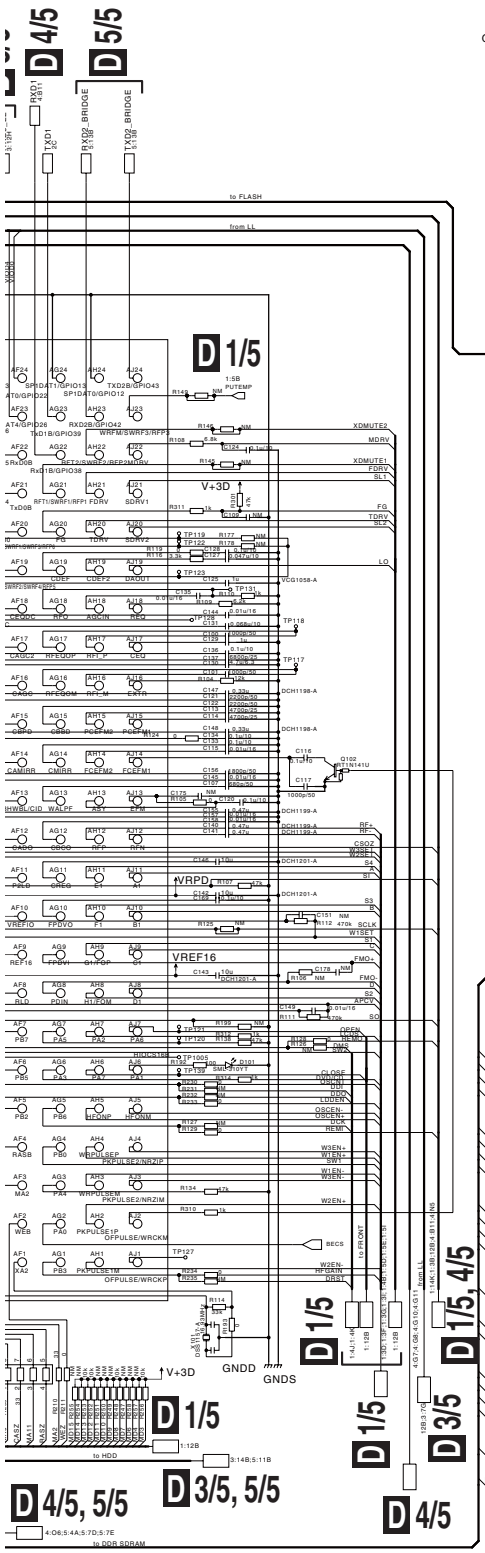
# 10.6 SERVICE MAIN ASSY (2/5)

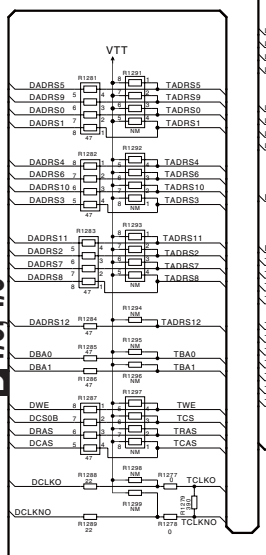


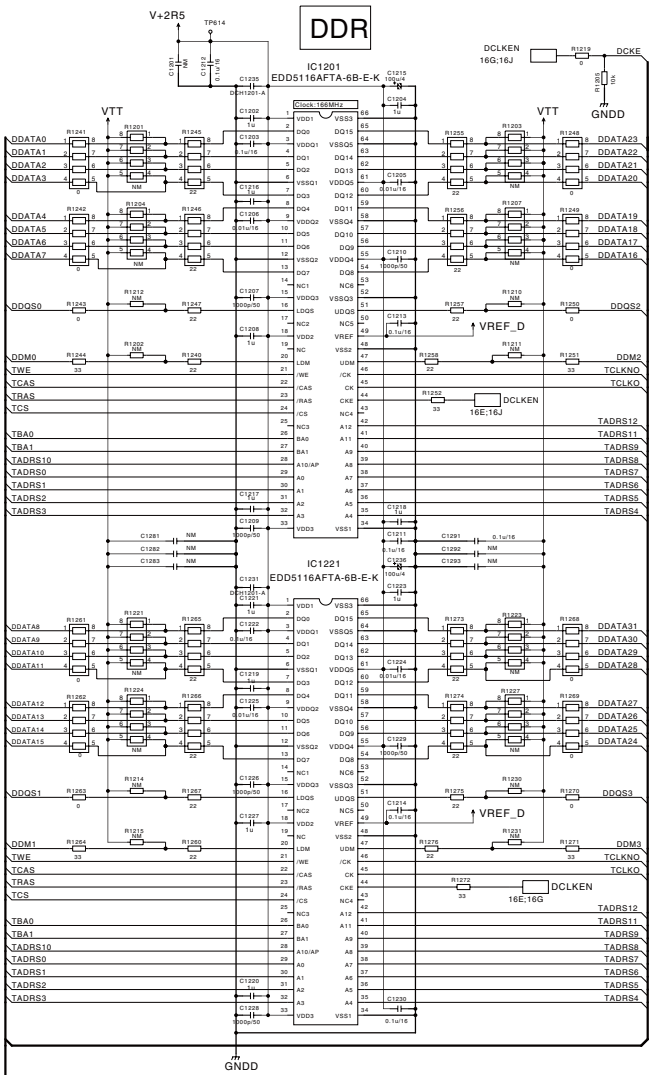
# D 2/5 SERVICE MAIN ASSY (2/5)
(VXX3242 : DVR-650H-K, DVR-550H-K)
(VXX3240 : DVR-450H-S)



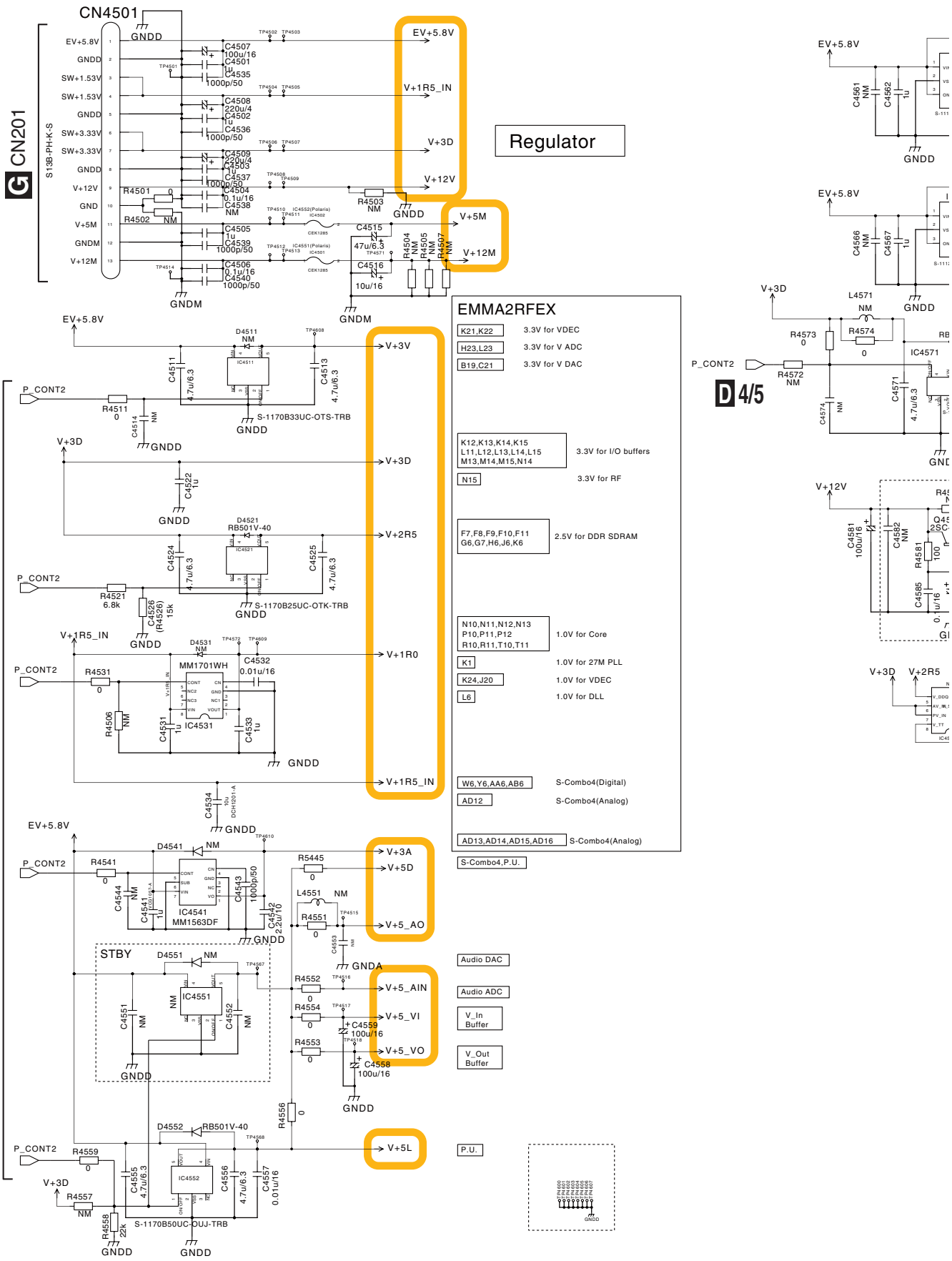



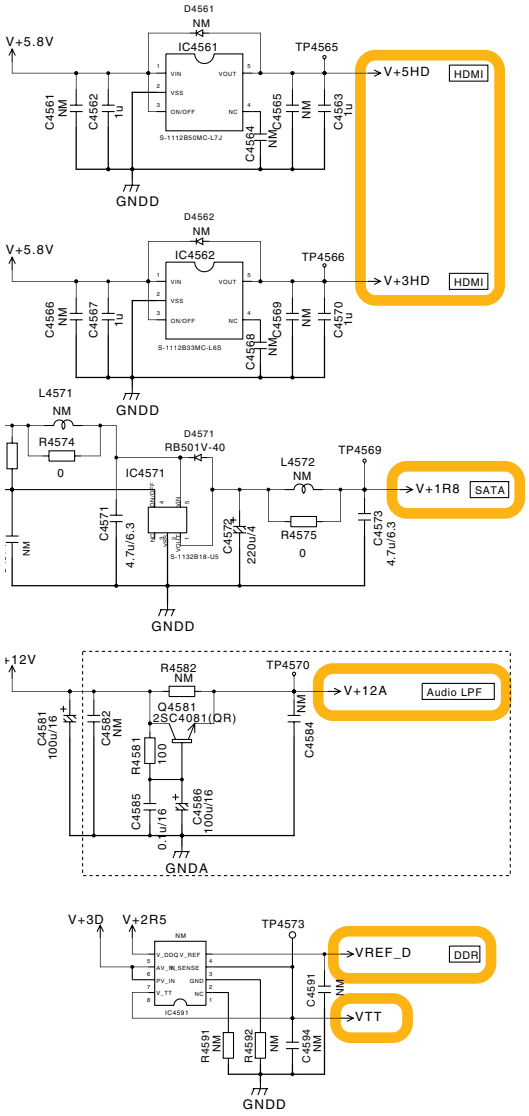



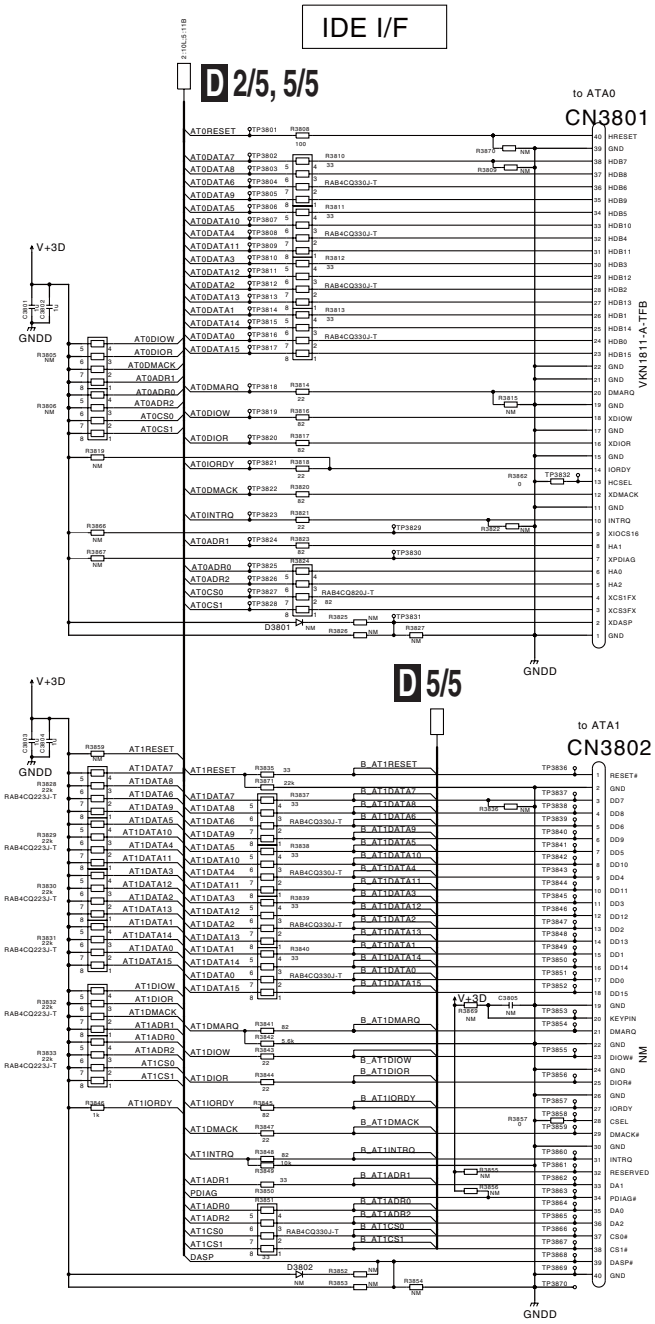
# 10.7 SERVICE MAIN ASSY (3/5)



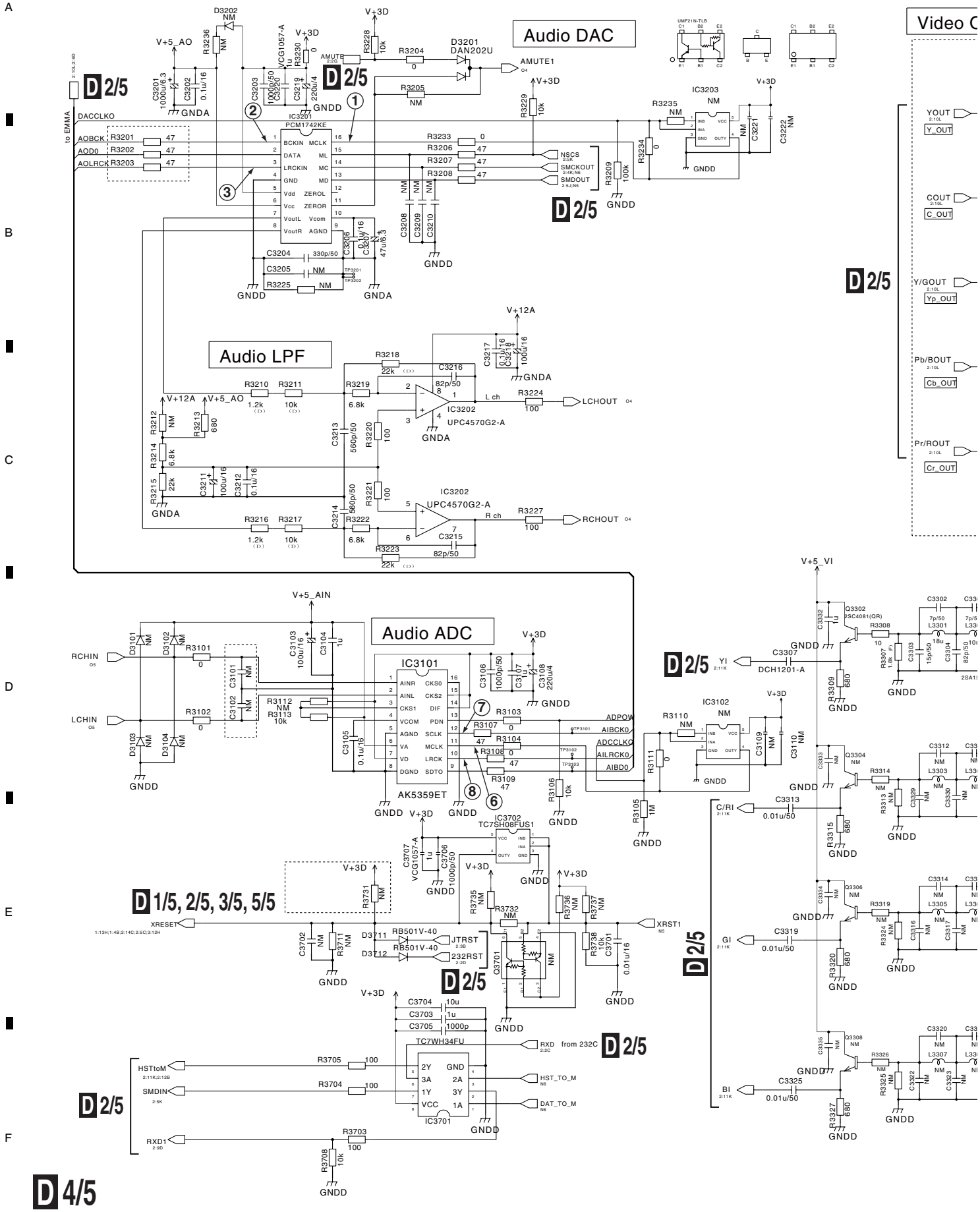
# D 3/5 SERVICE MAIN ASSY (3/5)
# (VXX3242 : DVR-650H-K, DVR-550H-K)
# (VXX3240 : DVR-450H-S)

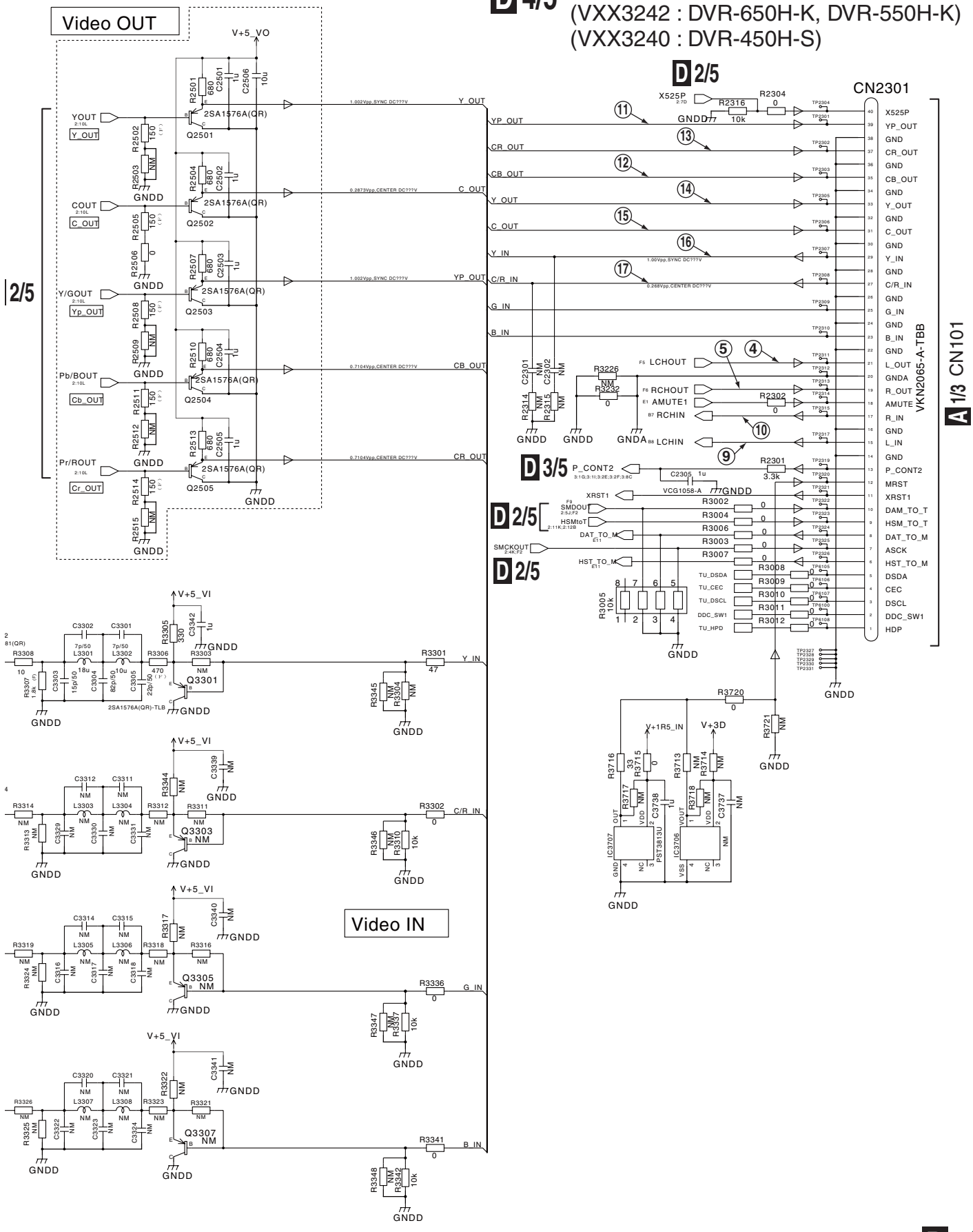



IDE I/F



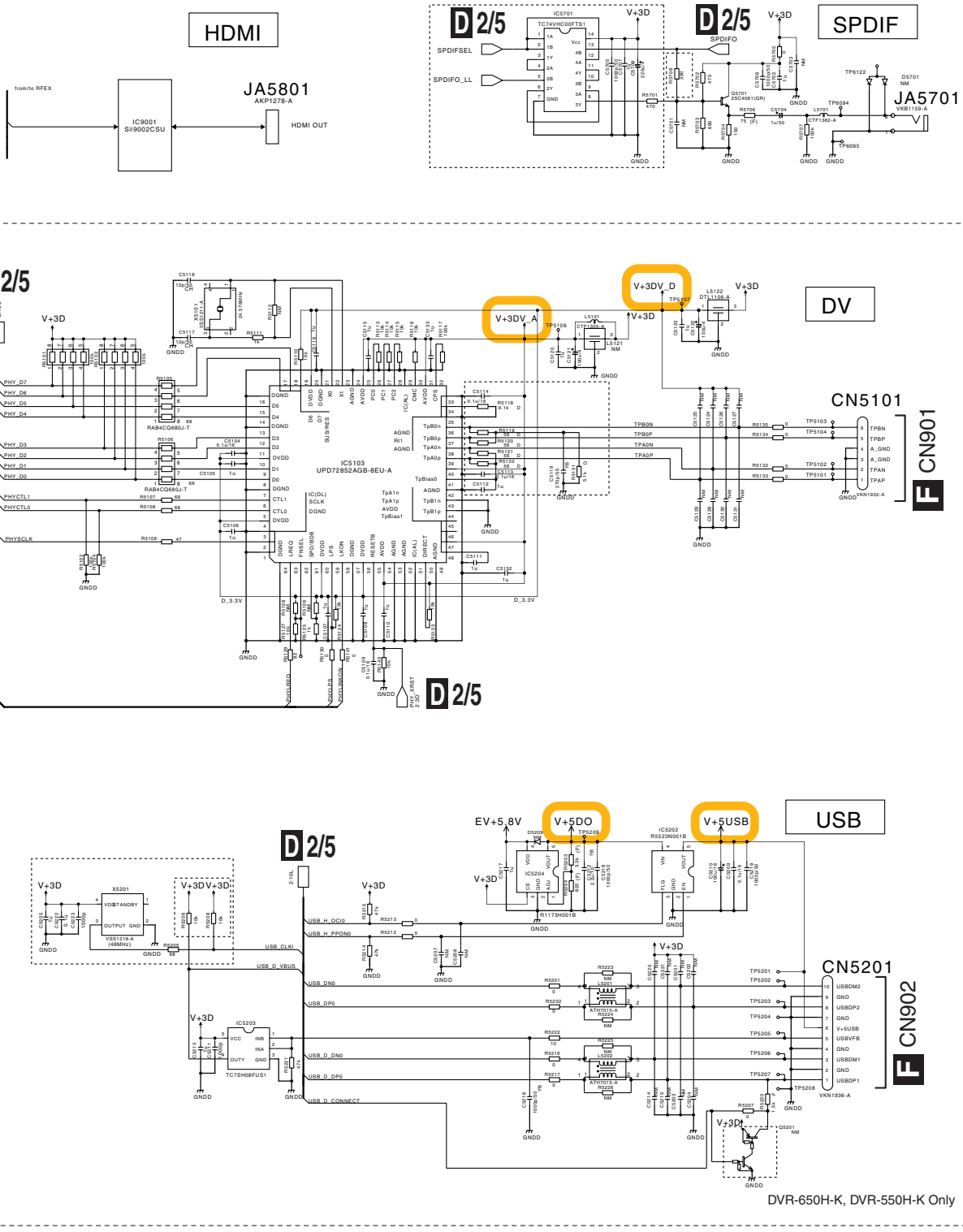
# 10.8 SERVICE MAIN ASSY (4/5)




Video OUT
Video IN
CN2301
VKN2065-A-TBB
A 1/3 CN101
D 2/5
D 3/5
D 4/5
2/5
V+5_VO
V+5_VI
V+1R5_IN
V+3D
GNDD
GNDA
2SA1576A(QR)
2SA1576A(QR)-TLB
VCG1058-A
PST3813U
Y_OUT
C_OUT
YP_OUT
CB_OUT
CR_OUT
G_IN
B_IN
C/R_IN
Y_IN
P_CONT2
XRST1
SMDOUT
HSMtoT
DAT_TO_M
HST_TO_M
SMCKOUT
TU_DSDA
TU_CEC
TU_DSCL
DDC_SW1
TU_HPD
LCHOUT
RCHOUT
AMUTE1
RCHIN
LCHIN
X525P
L_OUT
R_OUT
AMUTE
R_IN
L_IN
DAM_TO_T
HSM_TO_T
DAT_TO_M
ASCK
HST_TO_M
DSDA
CEC
DSCL
DDC_SW1
HDP
MRST
XRST1

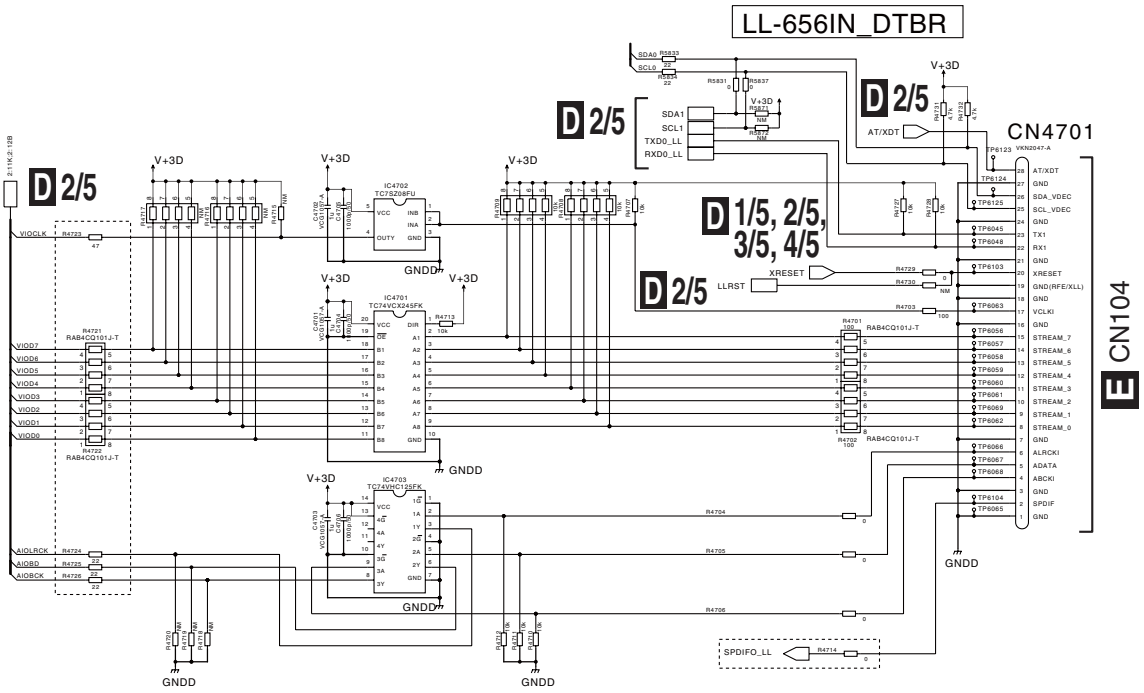
# 10.9 SERVICE MAIN ASSY (5/5)

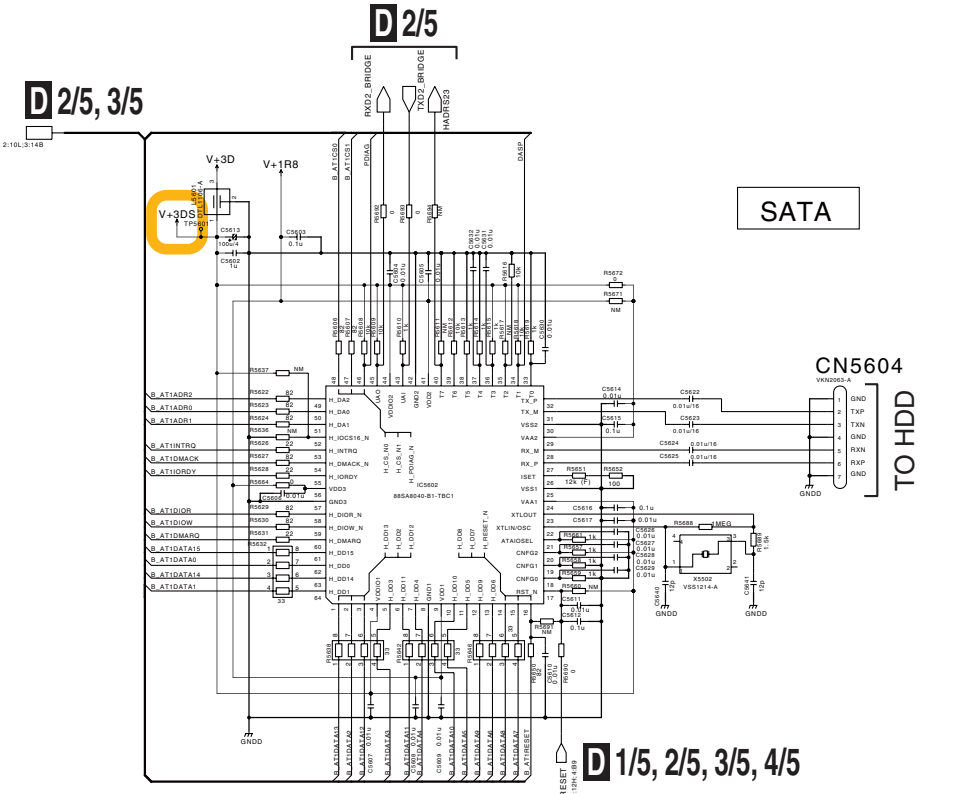
## D 5/5 SERVICE MAIN ASSY (5/5)
(VXX3242 : DVR-650H-K, DVR-550H-K)
(VXX3240 : DR-450H-S)



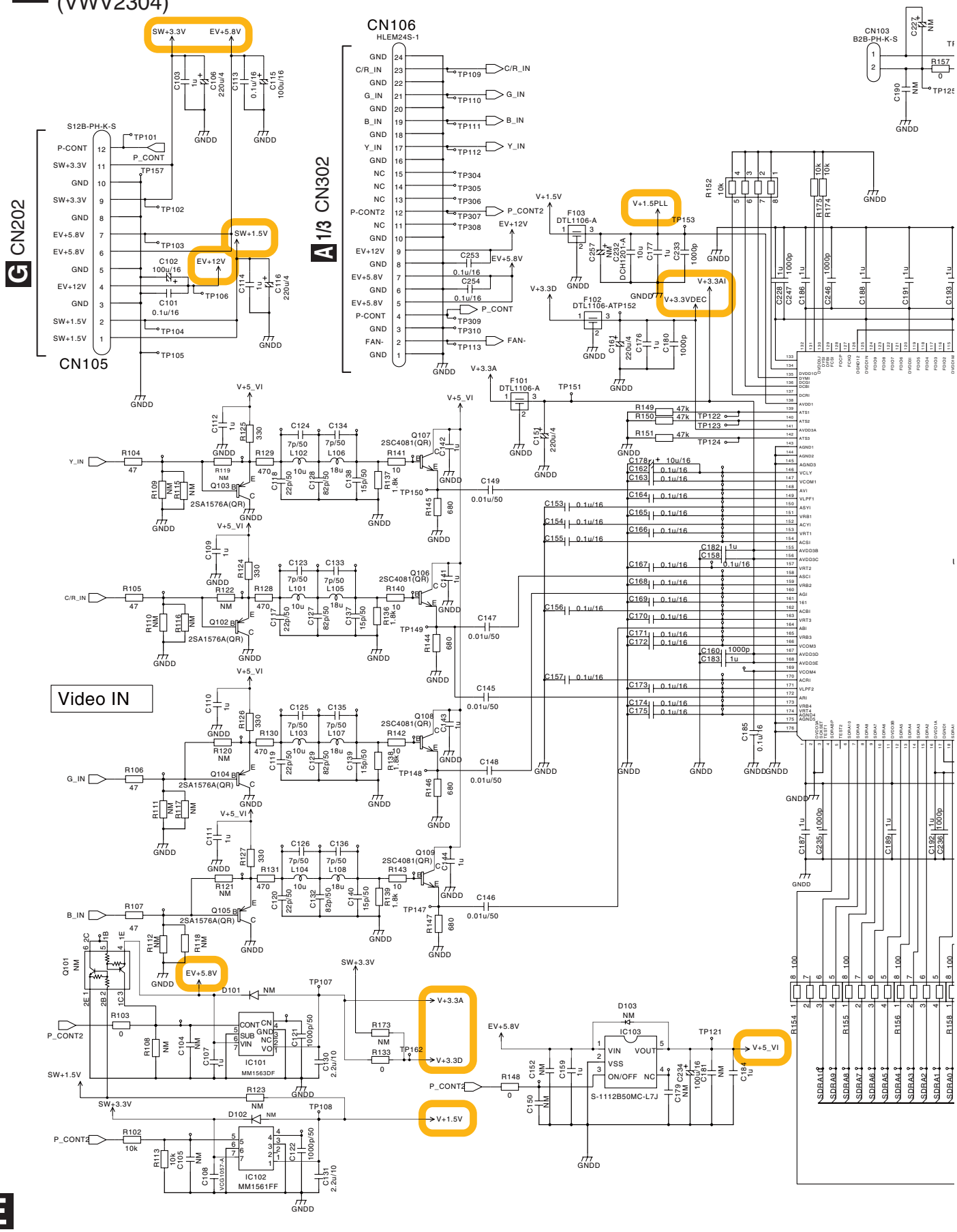

D 5/5

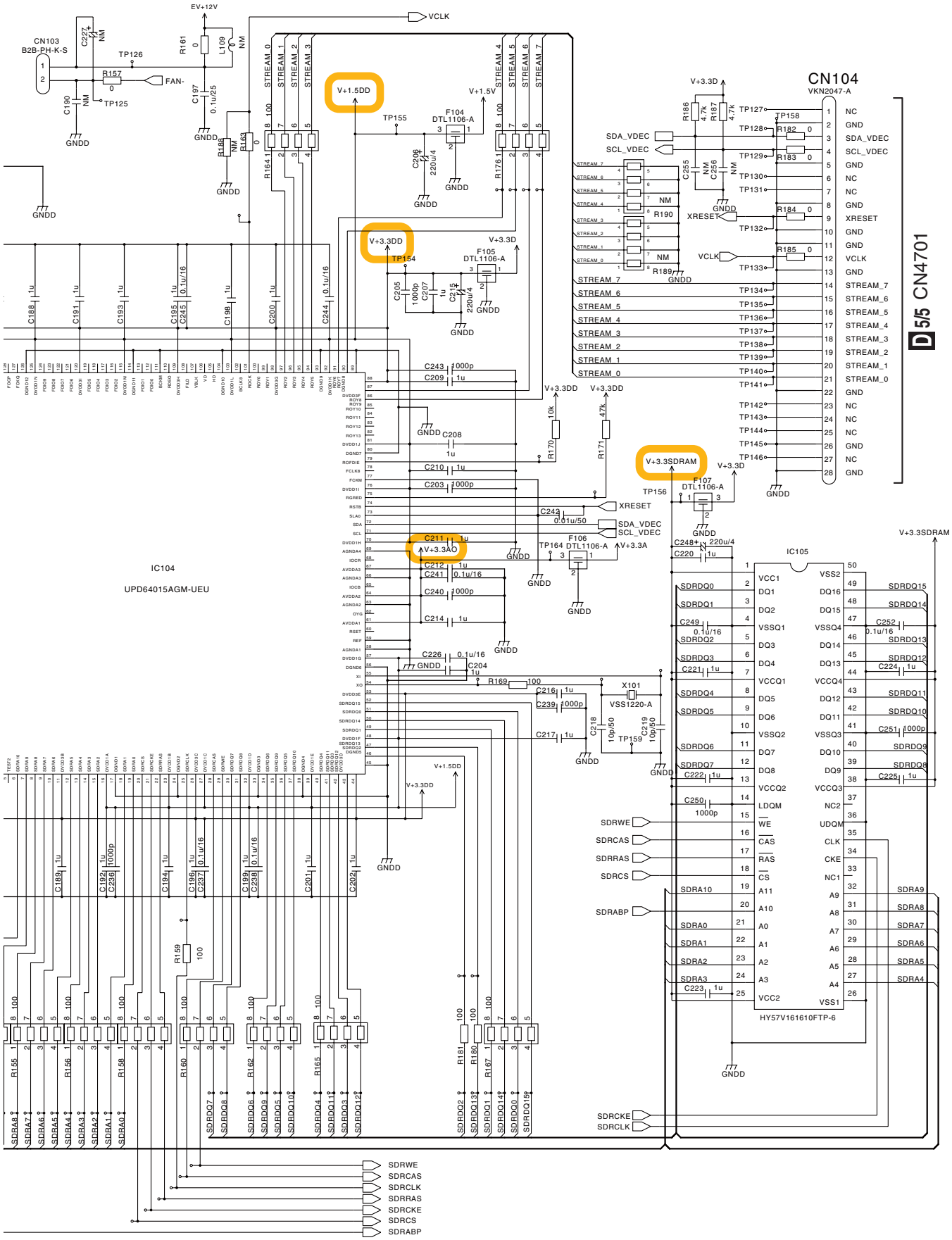
LL-656IN_DTBR



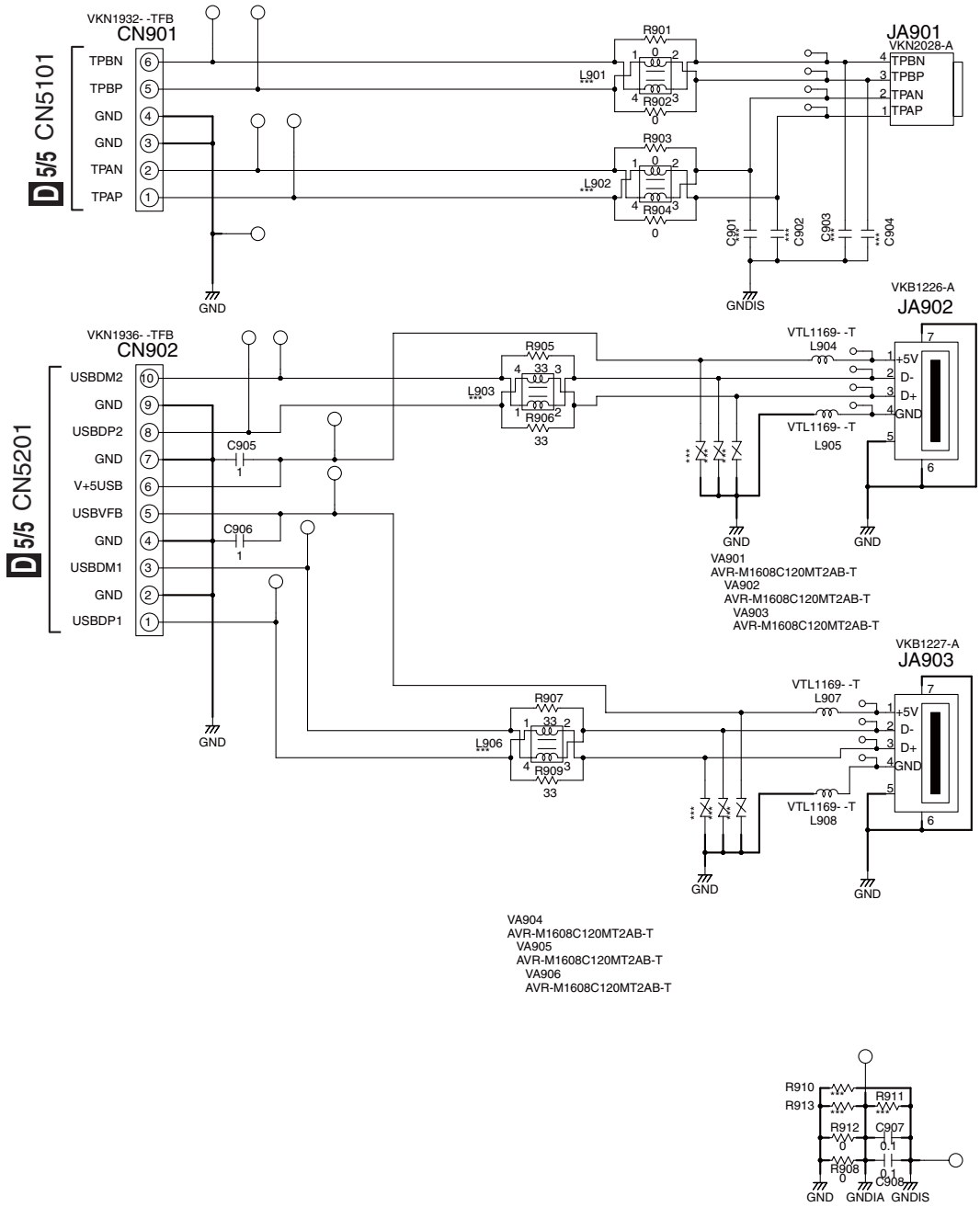
E VDEC ASSY
(VWV2304)




CN104
VKN2047-A
D 5/5 CN4701
IC104
UPD64015AGM-UEU
IC105
HY57V161610FTP-6
CN103
B2B-PH-K-S
V+1.5DD
V+3.3DD
V+3.3SDRAM
V+3.3AO
V+3.3A
V+3.3D
V+1.5V
V+1.5D
EV+12V
VCLK
XRESET
SDA_VDEC
SCL_VDEC
FAN-
GNDD
SDRWE
SDRCAS
SDRCLK
SDRRAS
SDRCKE
SDRCS
SDRABP

# 10.11 SERVICE DVUB ASSY

F SERVICE DVUB ASSY
(VXX3231)
(DVR-650H-K, DVR-550H-K Only)



A

B

C

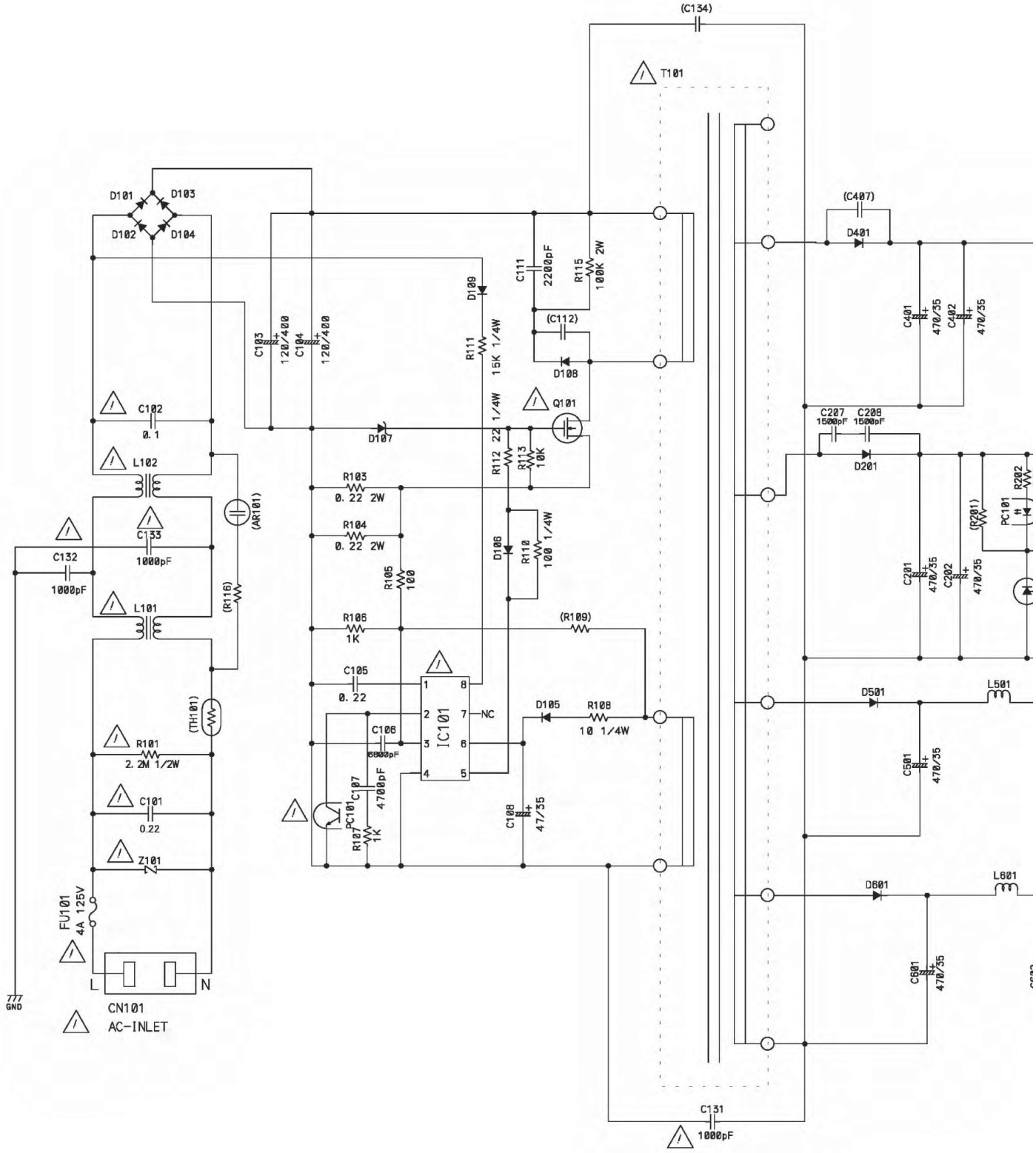
D

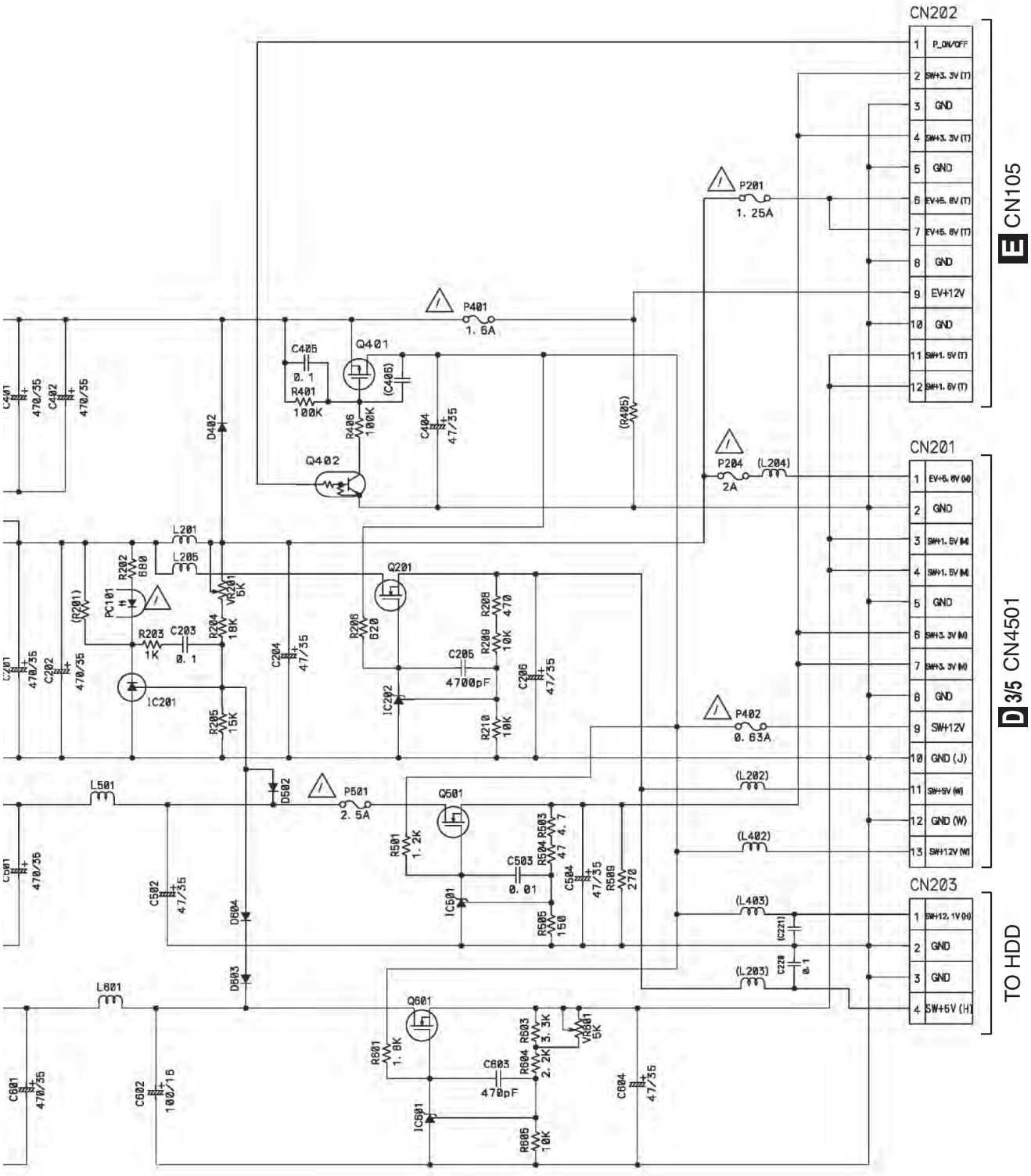
E

F

# 10.12 POWER SUPPLY ASSY

## G POWER SUPPLY ASSY (VWR1408)





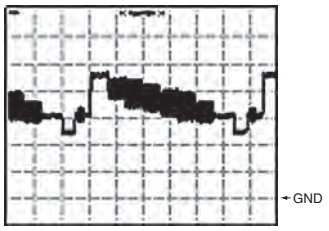

| Unit | Resistor | Ω/W (under 1/4W for no direction W) |
|---|---|---|
| | Capacitor | μF/V (under 50V for no direction V) |

# 10.13 WAVE FORMS

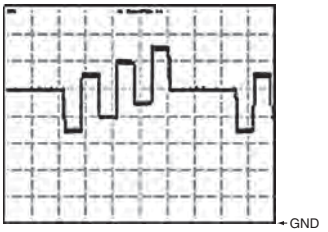
Note : The encircled numbers denote measuring point in the schematic diagram.

## A SERVICE TURB ASSY

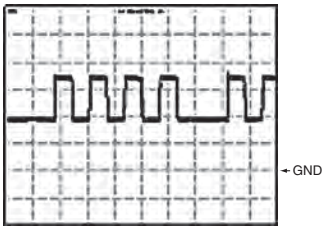
**1 IC401-pin18 (TU-VIN)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



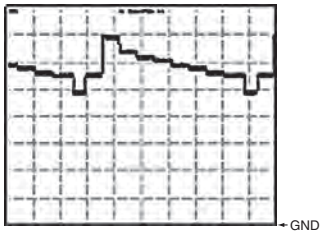

**6 C488+side (CbOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



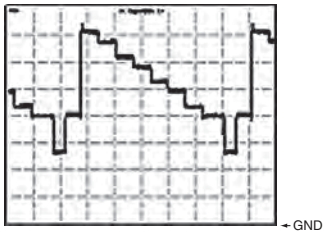

**11 CN101-pin6 (Cb_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



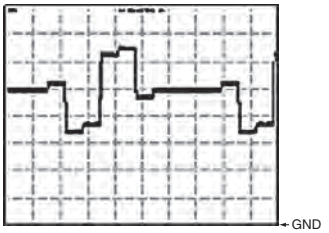

**16 CN308-pin8 (Y_IN TtoM)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



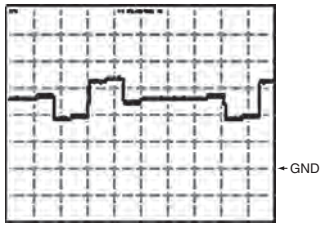

**2 C486+side (Y1OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



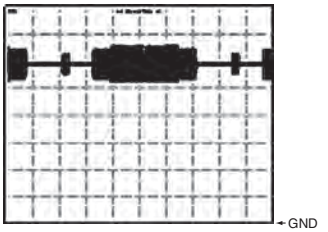

**7 C489+side (CrOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



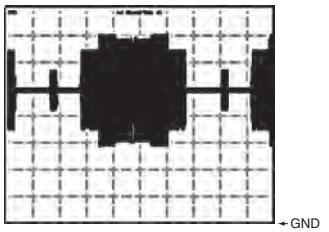

**12 CN101-pin4 (Cr_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



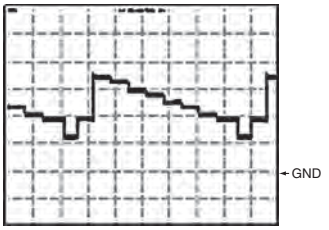

**17 CN302-pin2 (C_IN TtoM)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



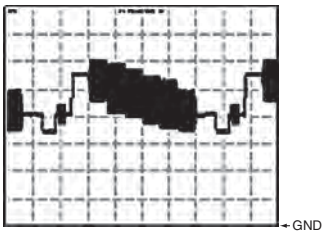

**3 IC401-pin34 (C1OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



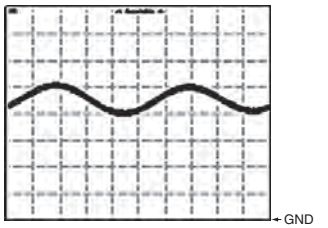

**8 CN101-pin8 (Y_OUT MtoT)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



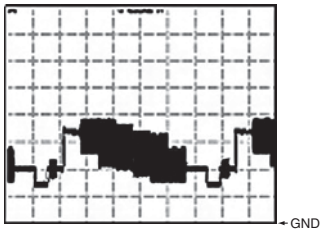

**13 IC401-pin14 (2VIN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



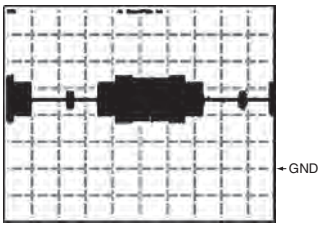

**18 IC401-pin87 (TU-LIN)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



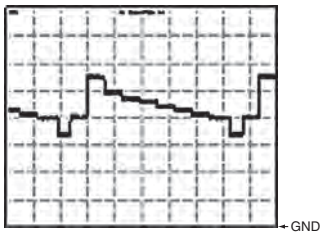

**4 C490+side (V2OUT)**
(Function : DVD play)
V:1V/div. H:10μsec/div.



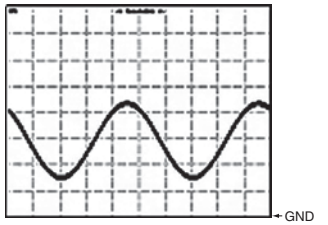

**9 CN101-pin10 (C_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



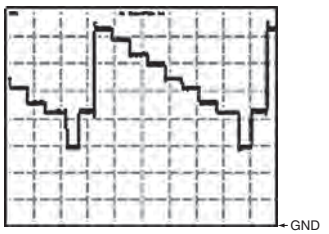

**14 IC401-pin7 (Y2IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



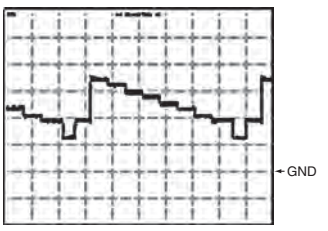

**19 C491+side (L_OUT)**
Function : DVD play)
V:500mV/div. H:10μsec/div.



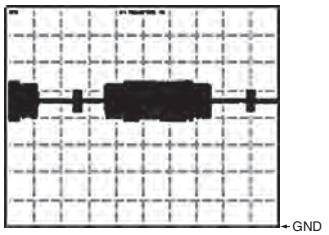

**5 C487+side (YOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



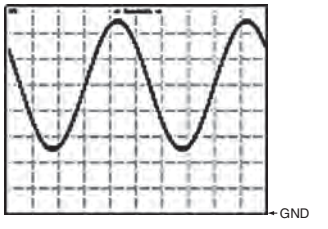

**10 CN101-pin2 (Yp_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.




**15 IC401-pin9 (C2IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



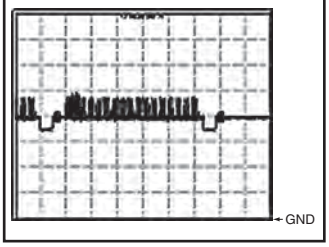

**20 CN101-pin26 (L_IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



# A SERVICE TURB ASSY

**Measurement Condition :**

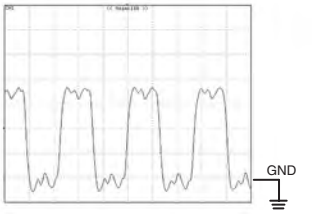
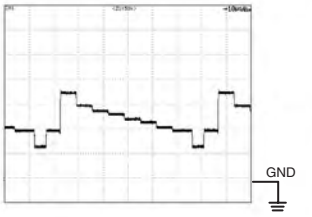
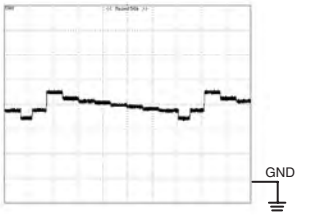
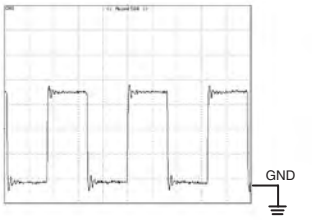
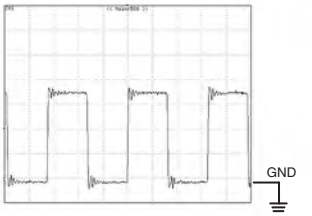
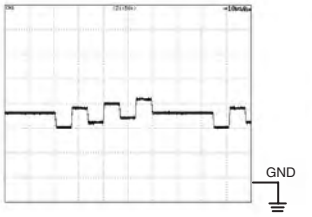
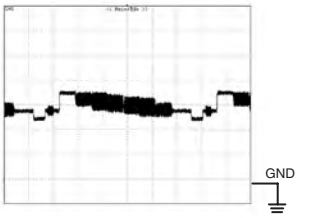
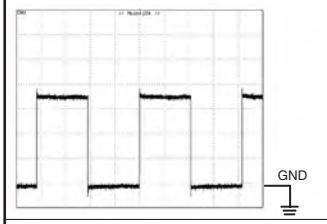
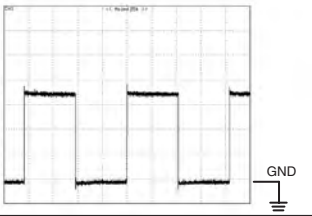
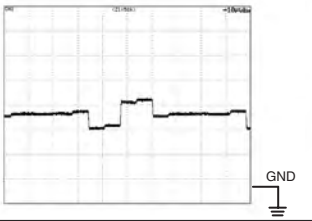
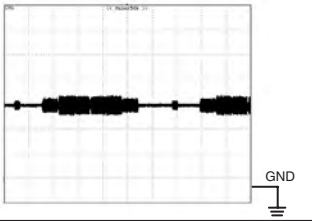
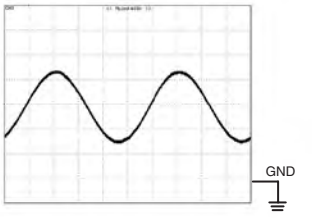
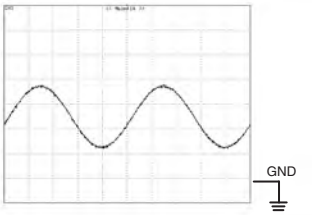
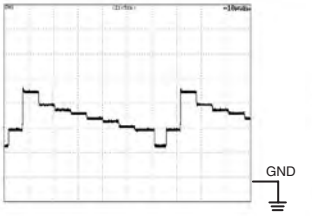
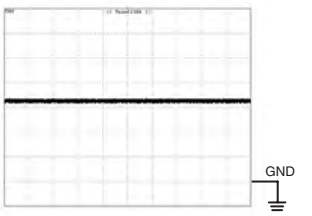
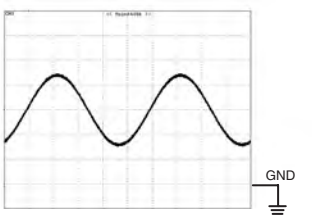
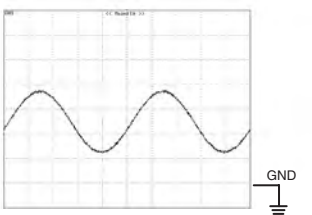
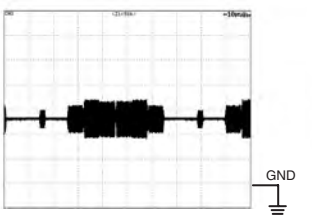
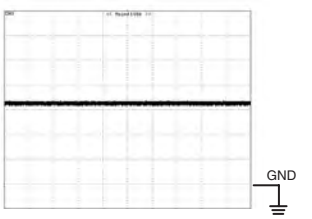
(21) **IC101-pin81 (TEXTV)**
(Function : RF IN)
V:1V/div. H:10μsec/div.



# D SERVICE MAIN ASSY

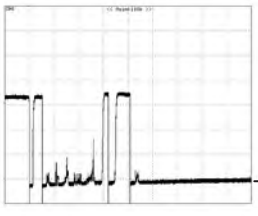
**Measurement Condition :**

No.1 - 8 : EBU Color Bar (100 / 0 / 75 / 0)

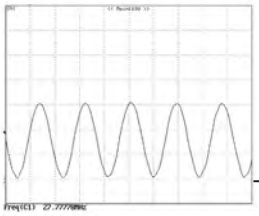
| | | | |
|---|---|---|---|
| **1** **IC3201 Pin16 (DACMCK)**<br>V: 1V/div. H: 20ns/div.<br> | **6** **IC3101 Pin11 (ADCCLK0)**<br>V: 1V/div. H: 20ns/div.<br>  | **11** **CN2301 Pin39 (YP)**<br>V: 0.5V/div. H: 10us/div.<br>  | **16** **CN2301 Pin29 (S_Y)**<br>V: 1V/div. H: 10us/div.<br>  |
| **2** **IC3201 Pin1 (DACBCK)**<br>V: 1V/div. H: 100ns/div.<br>  | **7** **IC3101 Pin12 (AD_BCK)**<br>V: 1V/div. H: 100ns/div.<br>  | **12** **CN2301 Pin35 (CB)**<br>V: 0.5V/div. H: 10us/div.<br>  | **16** **CN2301 Pin29 (CVBS)**<br>V: 1V/div. H: 10us/div.<br>  |
| **3** **IC3201 Pin3 (DACLRCK)**<br>V: 1V/div. H: 5us/div.<br>  | **8** **IC3101 Pin10 (AD_LRCK)**<br>V: 1V/div. H: 5us/div.<br>  | **13** **CN2301 Pin37 (CR)**<br>V: 0.5V/div. H: 10us/div.<br>  | **17** **CN2301 Pin27 (S_C)**<br>V: 1V/div. H: 10us/div.<br>  |
| **4** **CN2301 Pin21 (LCHOUT)**<br>V: 2V/div. H: 200us/div.<br>  | **9** **CN2301 Pin15 (LCHIN)**<br>V: 1V/div. H: 200us/div.<br>  | **14** **CN2301 Pin33 (Y)**<br>V: 0.5V/div. H: 10us/div.<br>  | **18** **IC501 Pin34 (XDMUTE1)**<br>V: 1V/div. H: 20us/div.<br>  |
| **5** **CN2301 Pin19 (RCHOUT)**<br>V: 2V/div. H: 200us/div.<br>  | **10** **CN2301 Pin17 (RCHIN)**<br>V: 1V/div. H: 200us/div.<br>  | **15** **CN2301 Pin31 (C)**<br>V: 0.5V/div. H: 10us/div.<br>  | **19** **IC501 Pin35 (XDMUTE2)**<br>V: 1V/div. H: 20us/div.<br>  |

# D SERVICE MAIN ASSY

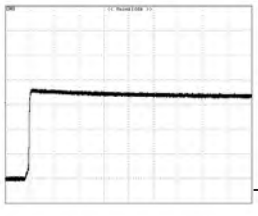
**20** **CN601 Pin3 (CLOSE)**
**open → close**
V: 1V/div. H: 20us/div.



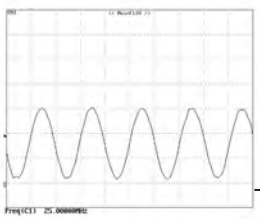

**23** **X1002 (27.77778 MHz)**
V: 1V/div. H: 20ns/div.



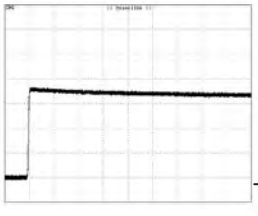

**20** **CN601 Pin3 (CLOSE)**
**close → open**
V: 1V/div. H: 20us/div.



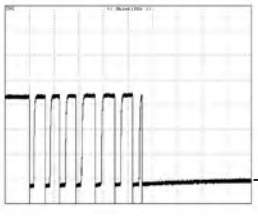

**24** **X1001 (25 MHz)**
V: 1V/div. H: 20ns/div.



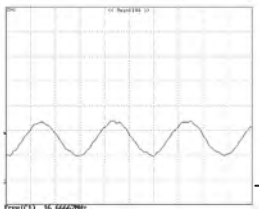

**21** **CN601 Pin5 (OPEN)**
**open → close**
V: 1V/div. H: 20us/div.




**21** **CN601 Pin5 (OPEN)**
**close → open**
V: 1V/div. H: 20us/div.




**22** **X101 (16.66667 MHz)**
V: 1V/div. H: 20ns/div.



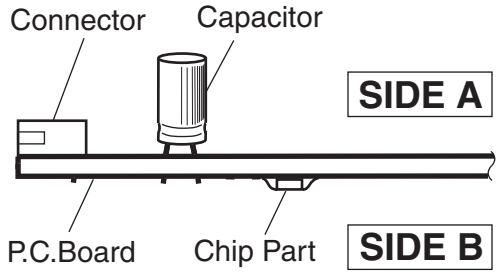
# 11. PCB CONNECTION DIAGRAM

## NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

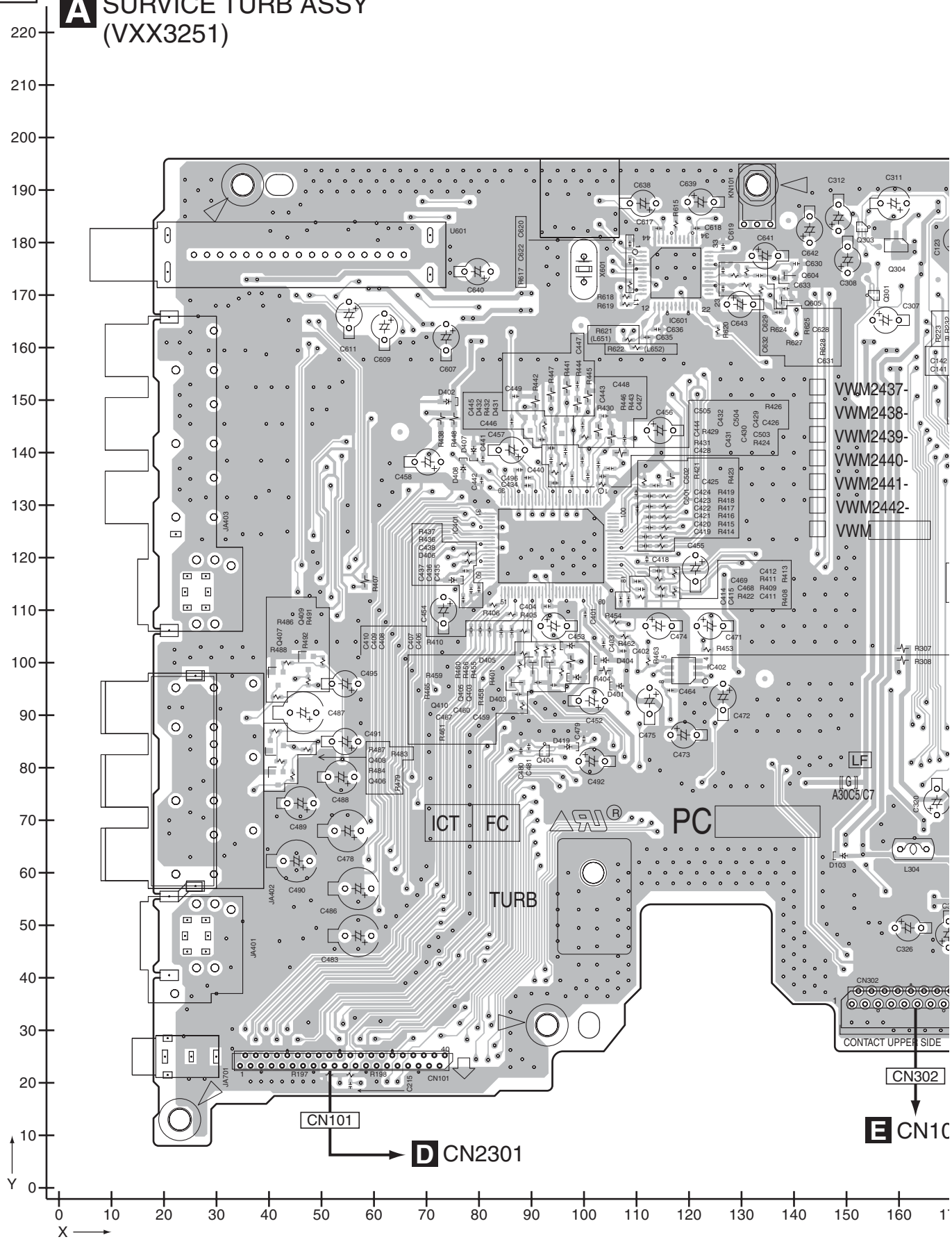
| Symbol In PCB Diagrams | Symbol In Schematic Diagrams | Part Name |
|---|---|---|
| B C E | B C E B C E | Transistor |
| B C E | B C E B C E | Transistor with resistor |
| D G S | D G S D G S | Field effect transistor |
| | | Resistor array |
| | | 3-terminal regulator |

3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



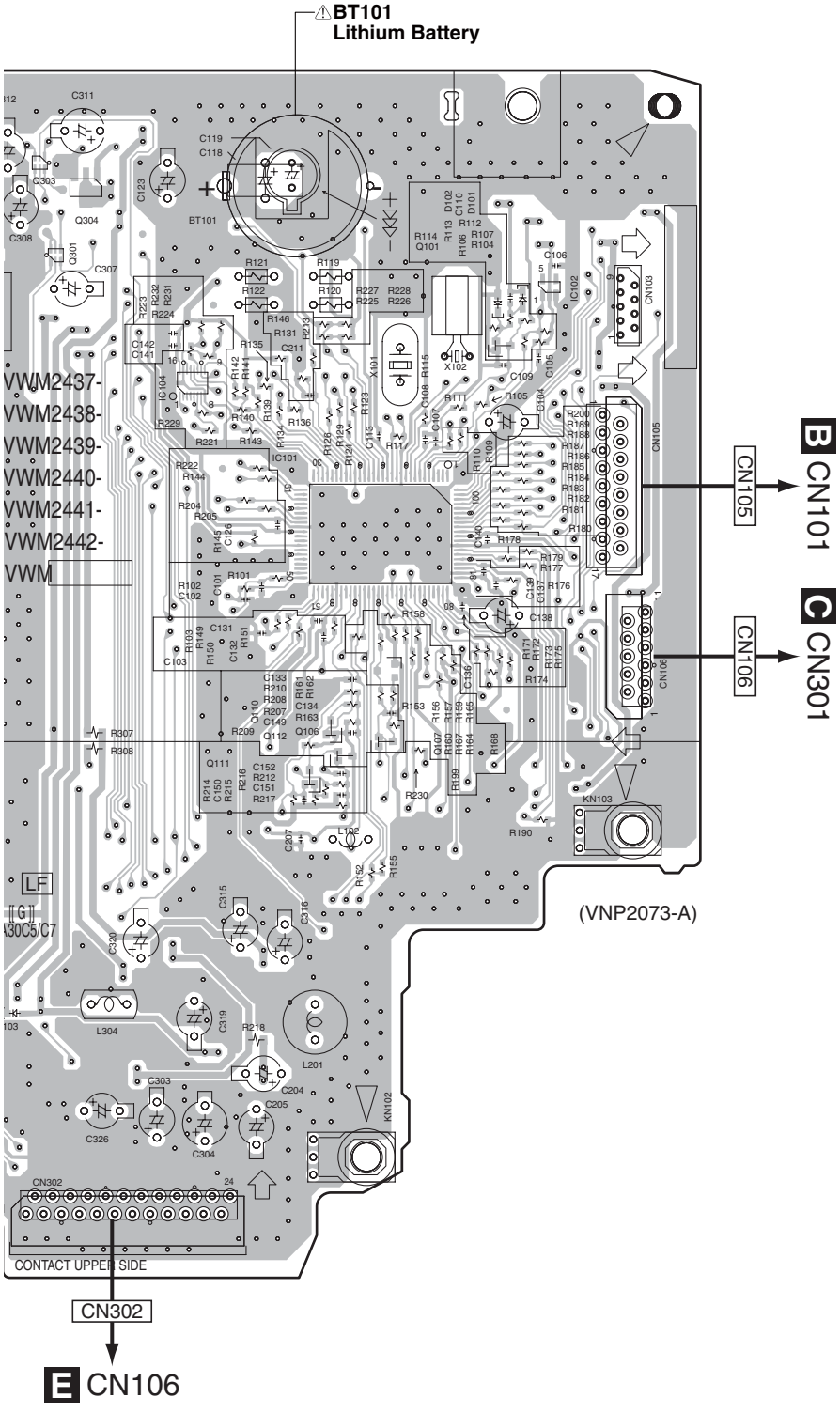
# 11.1 SERVICE TURB ASSY

**SIDE A**



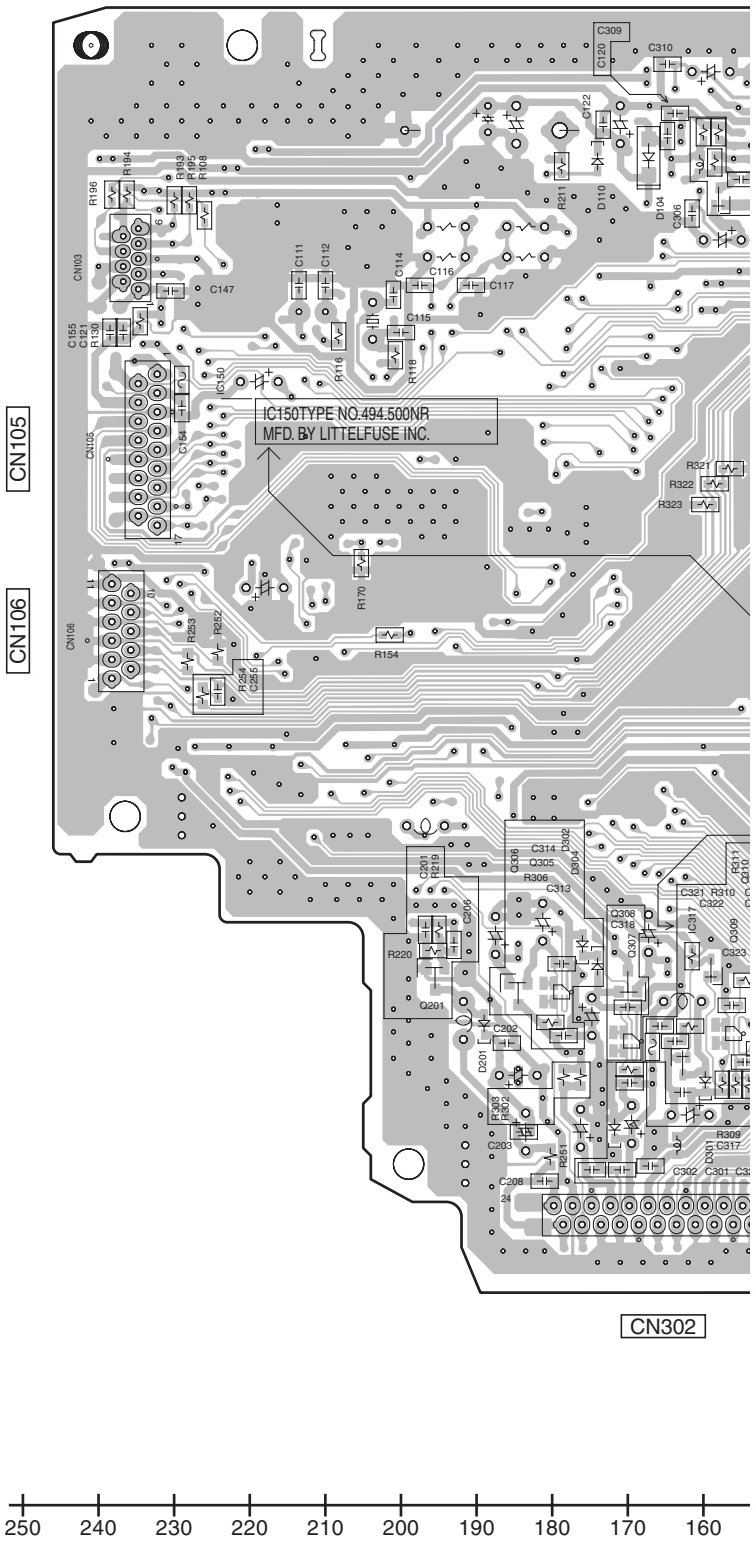

**A**

SIDE A


BT101
Lithium Battery
VWM2437-
VWM2438-
VWM2439-
VWM2440-
VWM2441-
VWM2442-
VWM
B CN101
CN105
C CN301
CN106
(VNP2073-A)
CONTACT UPPER SIDE
CN302
E CN106

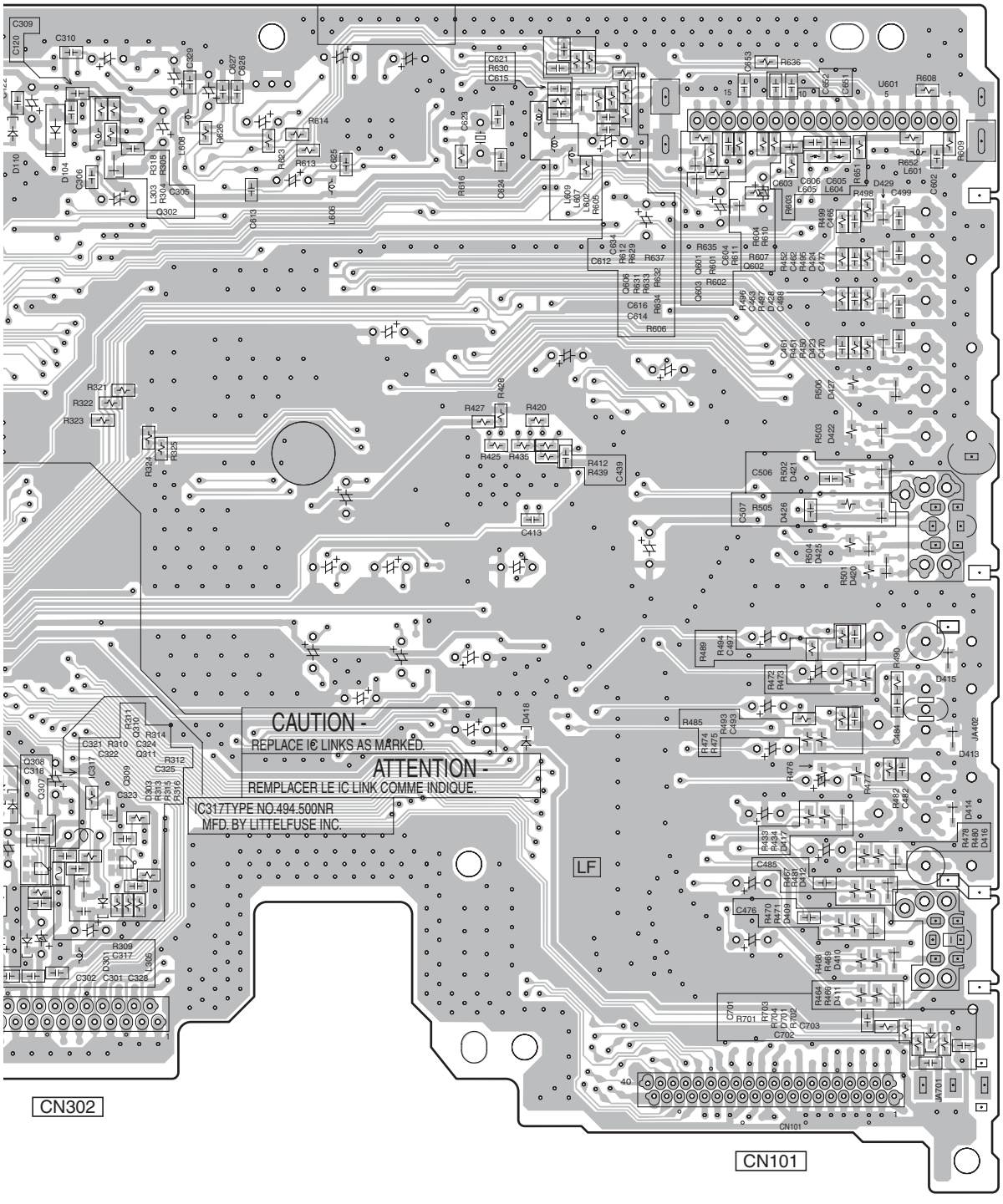
**SIDE B**

# A SERVICE TURB ASSY (VXX3251)




**A**

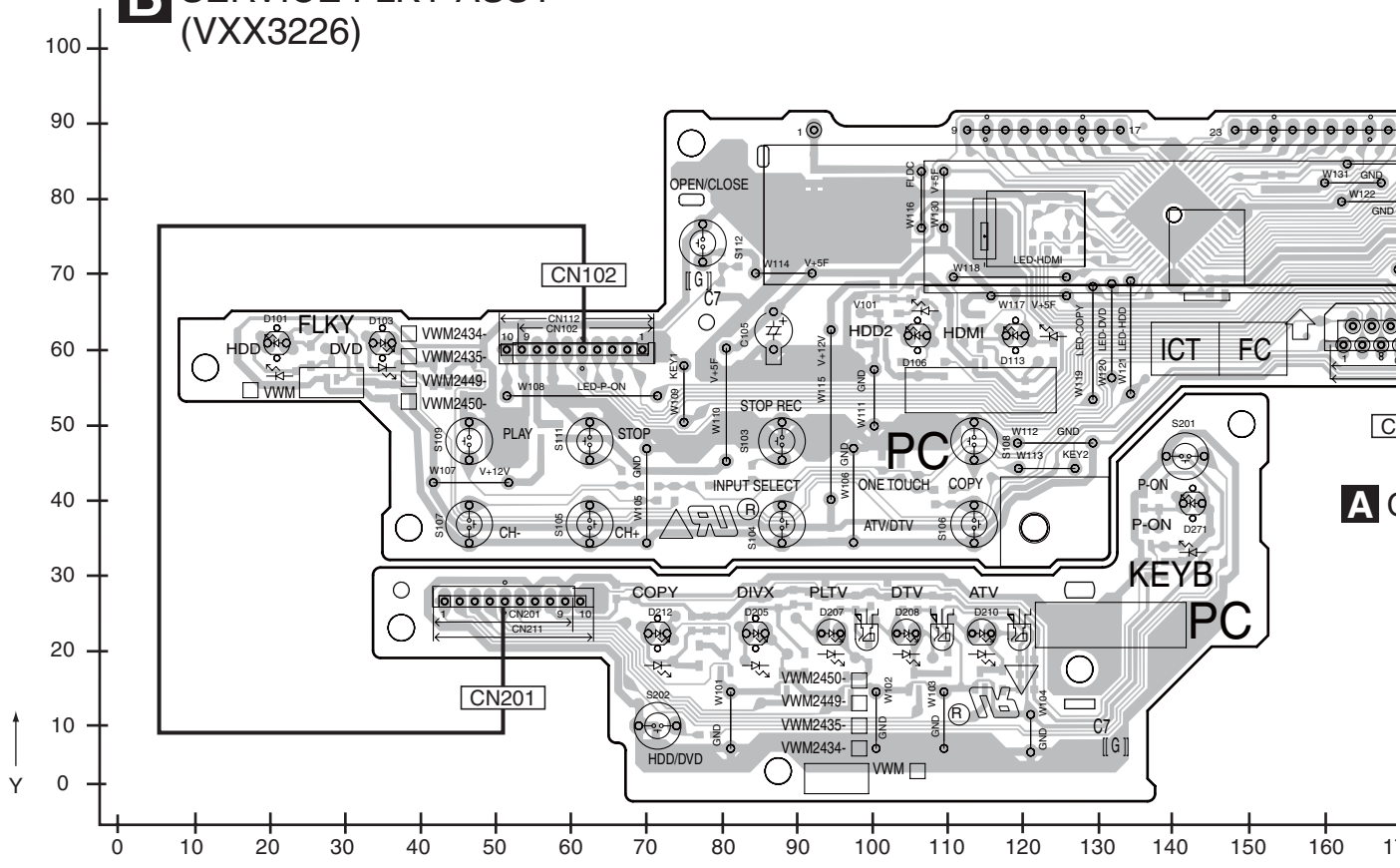
SIDE B


CAUTION -
REPLACE IC LINKS AS MARKED.
ATTENTION -
REMPLACER LE IC LINK COMME INDIQUE.
IC317TYPE NO.494.500NR
MFD. BY LITTELFUSE INC.
LF
CN302
CN101
(VNP2073-A)

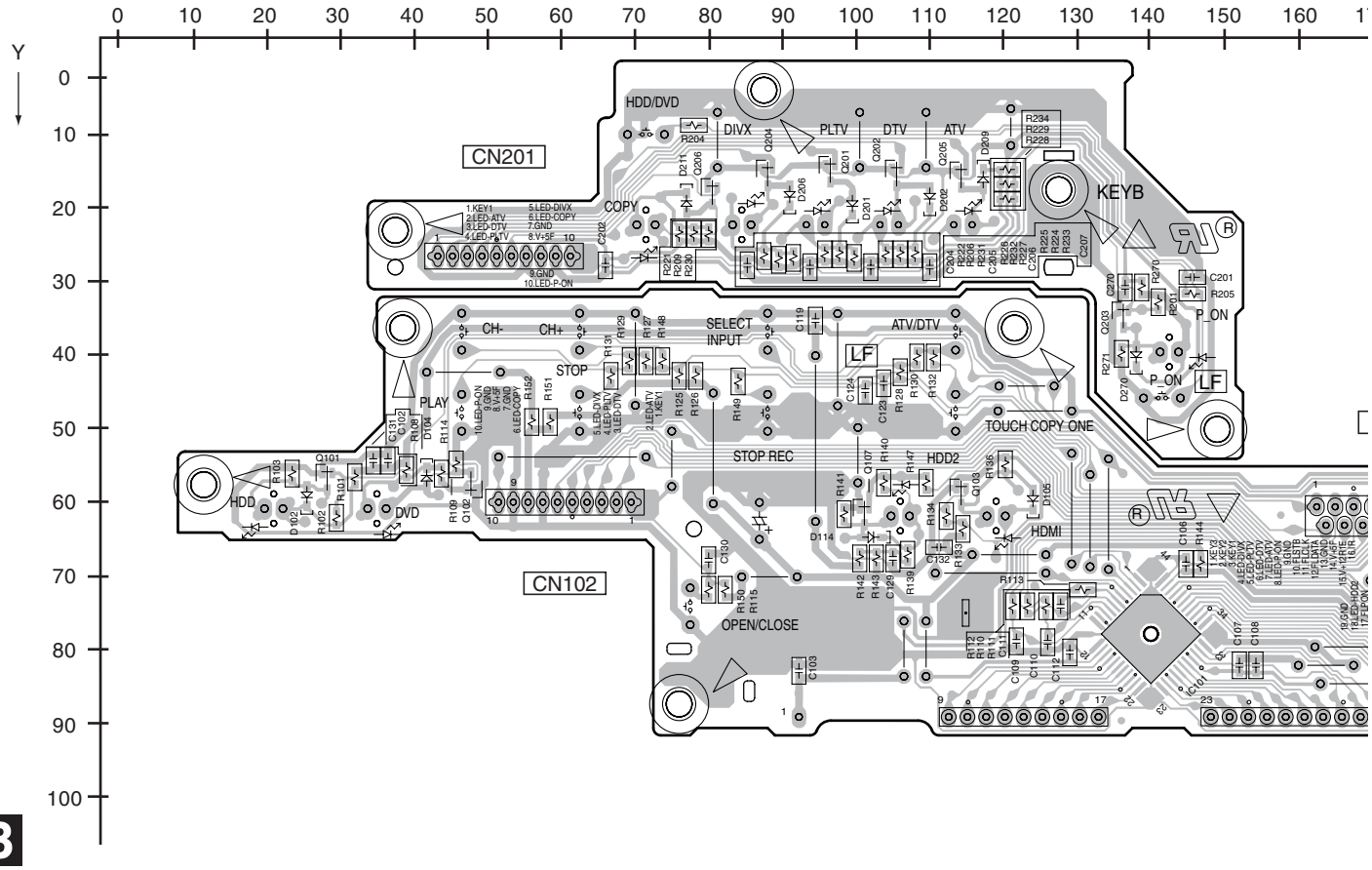
## 11.2 SERVICE FLKY ASSY

**SIDE A**

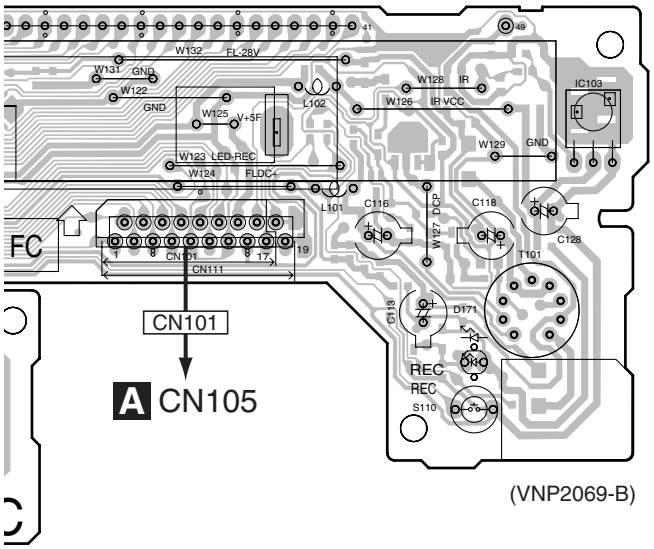
**B** SERVICE FLKY ASSY
(VXX3226)



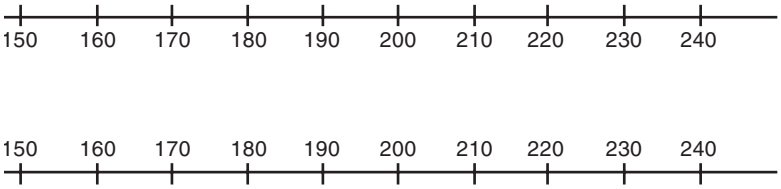

**SIDE B**



**SIDE A**



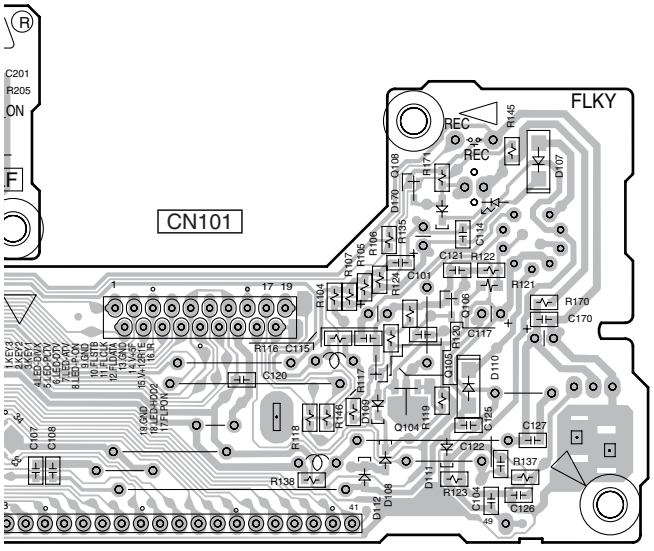

(VNP2069-B)





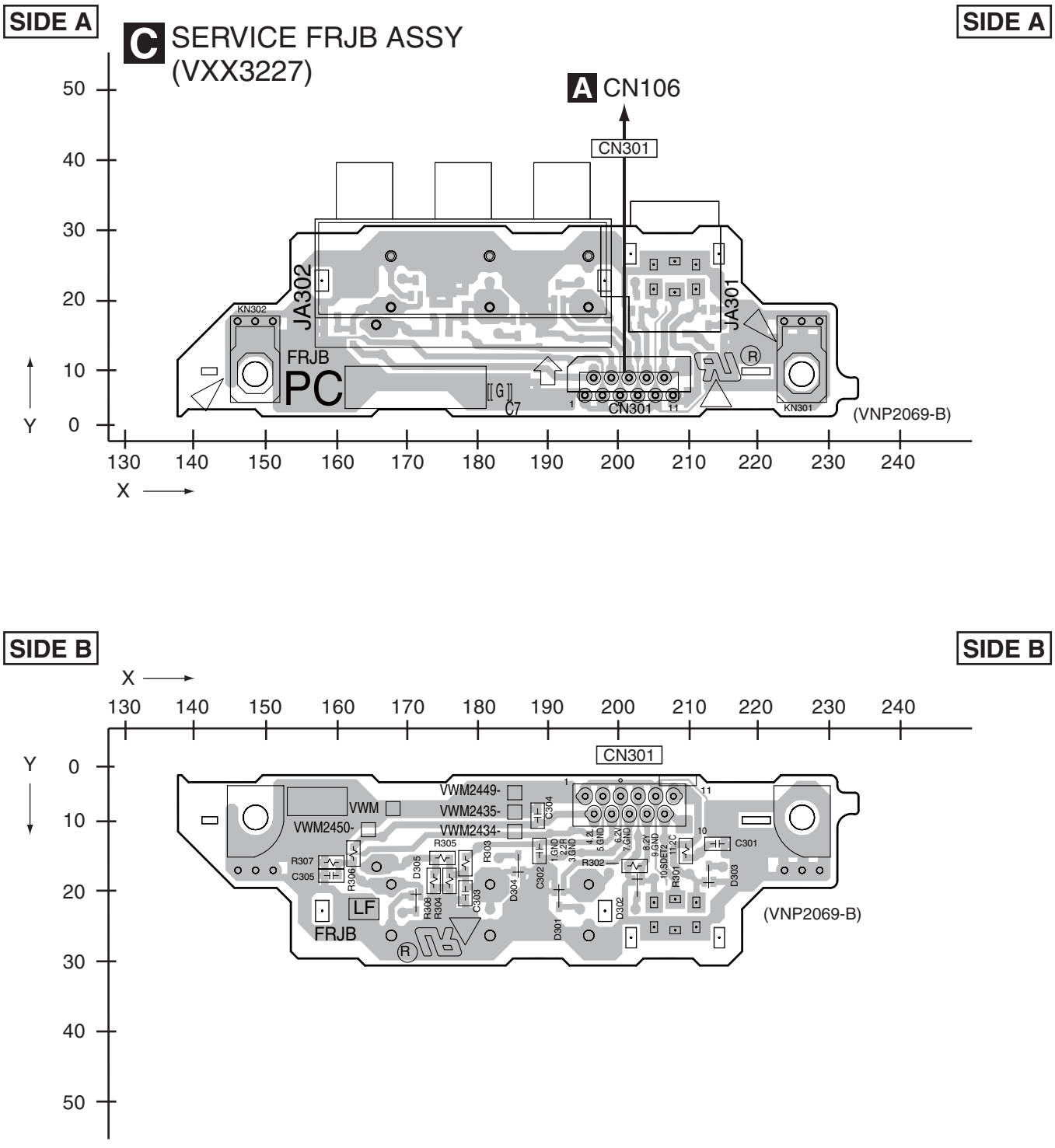


**SIDE B**




(VNP2069-B)

## 11.3 SERVICE FRJB ASSY



A

B

C

D

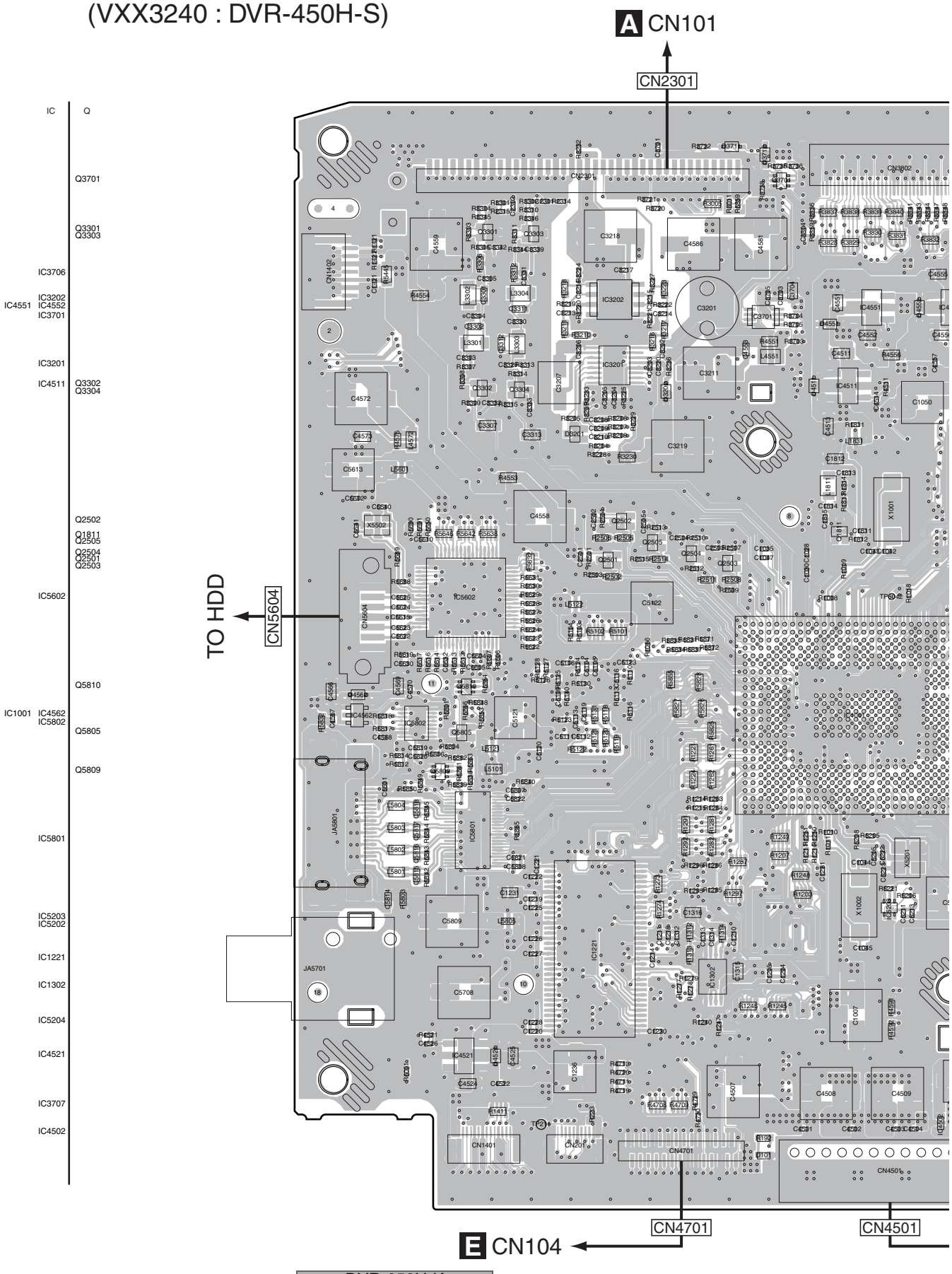
E

F

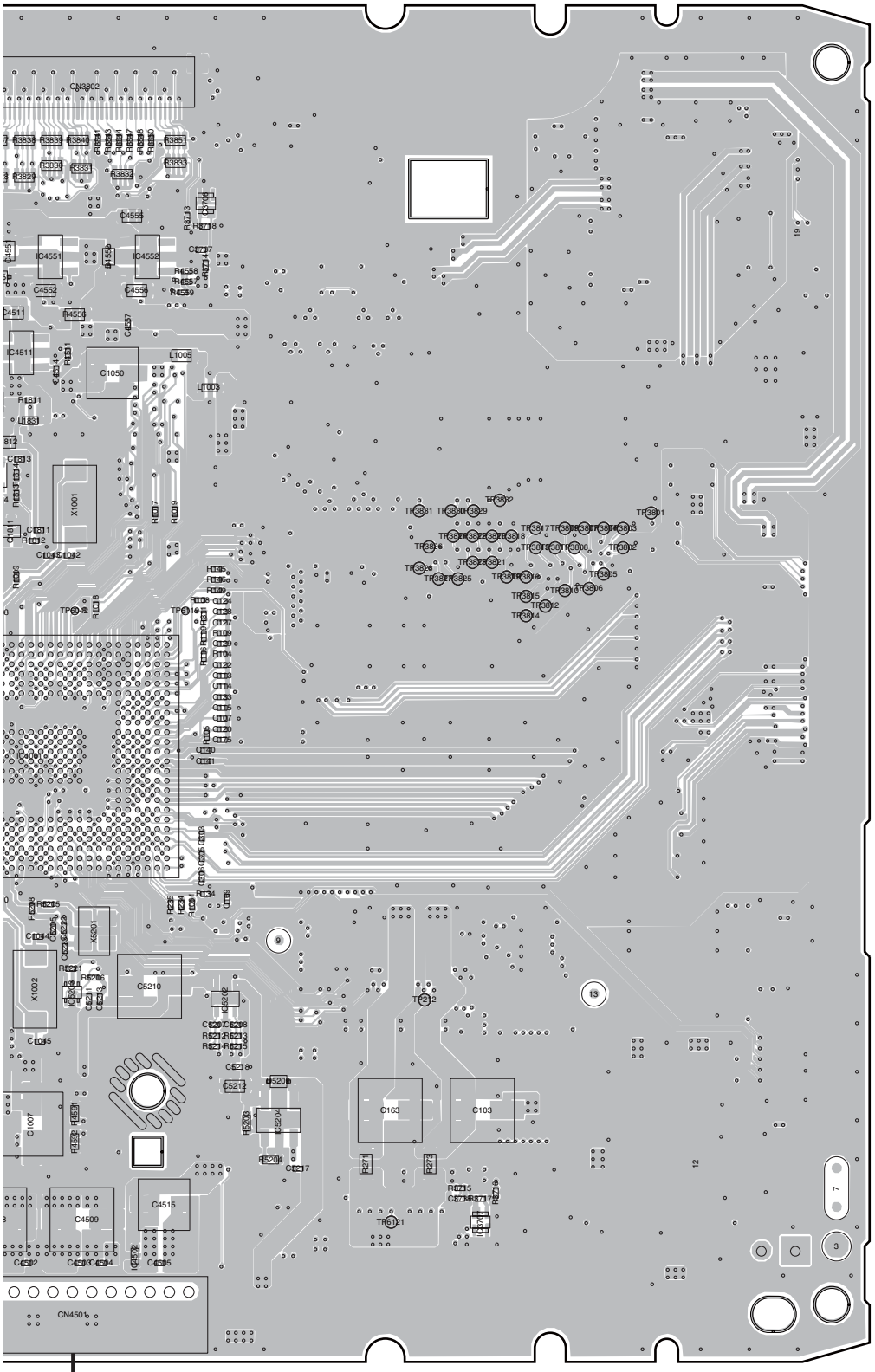
# 11.4 SERVICE MAIN ASSY

**SIDE A**

**D** SERVICE MAIN ASSY
(VXX3242 : DVR-650H-K, DVR-550H-K)
(VXX3240 : DVR-450H-S)



**SIDE A**



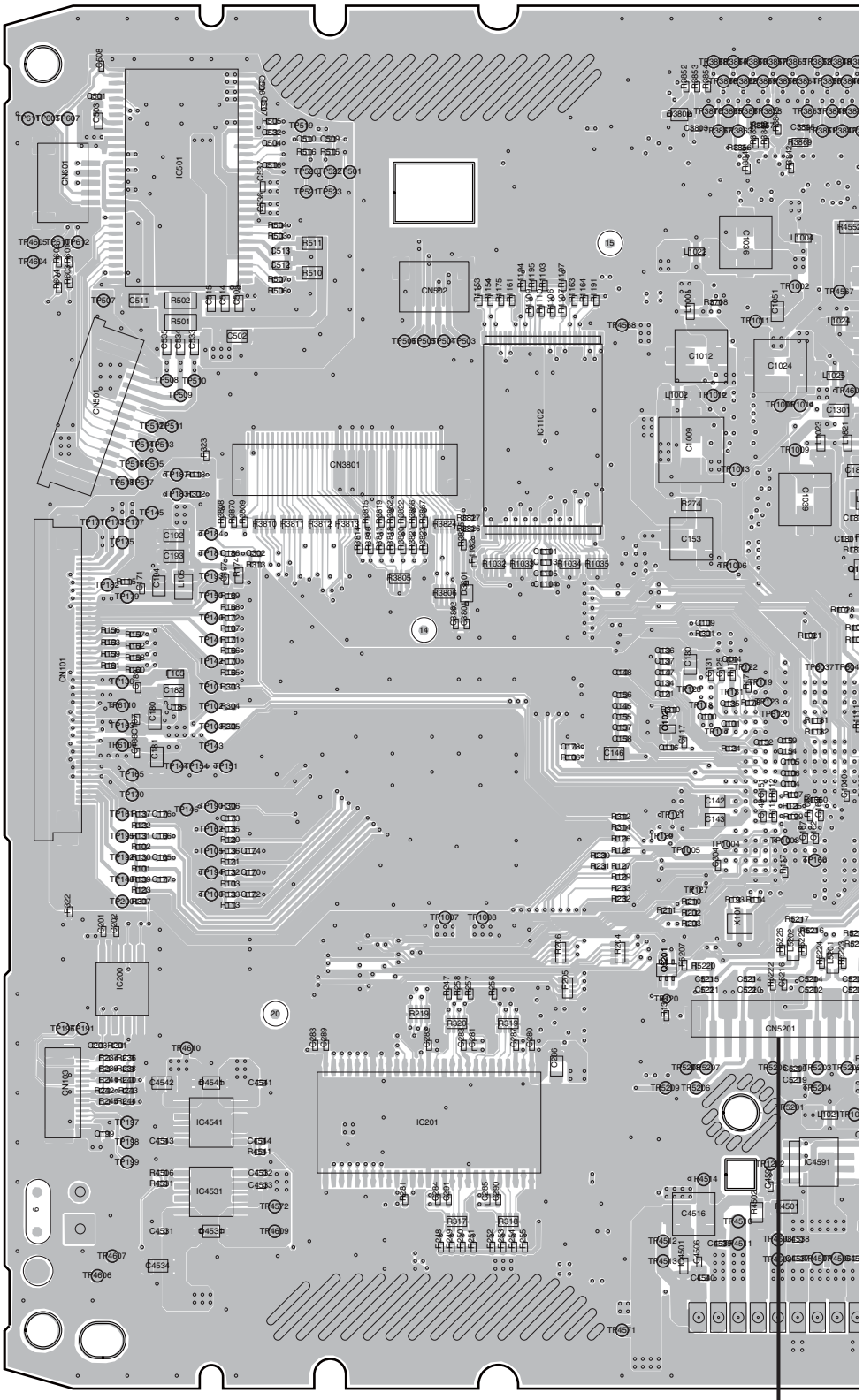

CN4501 → G CN201

(VNP2056-C)

**SIDE B**

# D SERVICE MAIN ASSY
(VXX3242 : DVR-650H-K, DVR-550H-K)
(VXX3240 : DVR-450H-S)

| IC | Q |
|---|---|
| IC3702 | |
| | Q3305 |
| IC501 | |
| | Q4581 |
| | Q3307 |
| IC3101 | |
| IC3203 | |
| IC4571 | |
| IC3102 | |
| | Q3306 |
| | Q3308 |
| IC1301 | |
| IC1102 | |
| | Q1801 |
| | Q102 |
| IC5103 | |
| IC4561 | |
| | Q5808 |
| | Q5801 |
| | Q5802 |
| | Q5804 |
| IC200 | Q5201 |
| | Q5701 |
| IC1201 | IC5701 |
| IC4541 | IC201 |
| IC4591 | |
| IC4531 | |
| IC4701 | |
| IC4703 | |
| IC4501 | |
| IC4702 | |

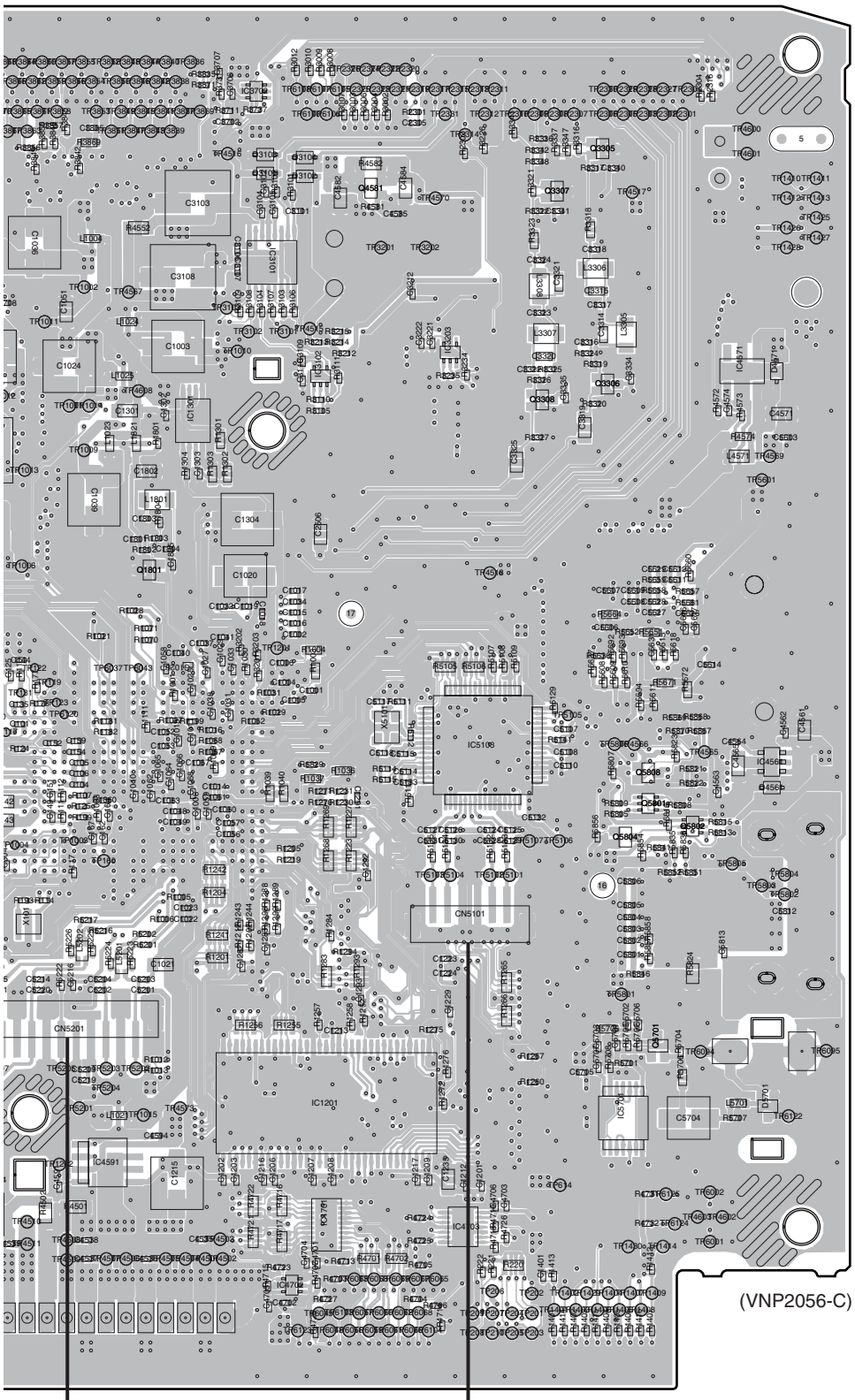



D



DVR-650H-K

**SIDE B**



(VNP2056-C)

CN5201

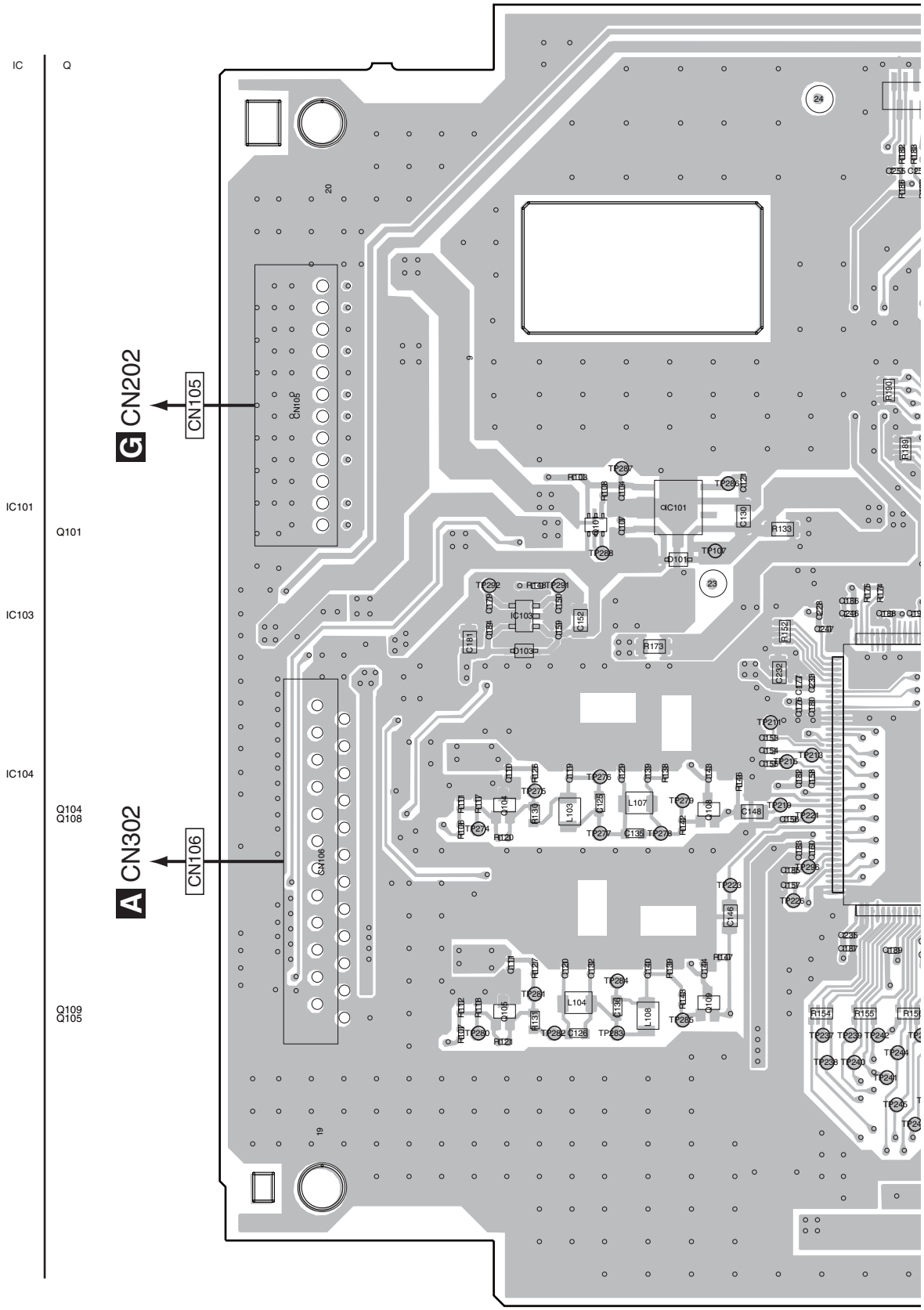
CN5101

**F** CN901

# 11.5 VDEC ASSY

**SIDE A**

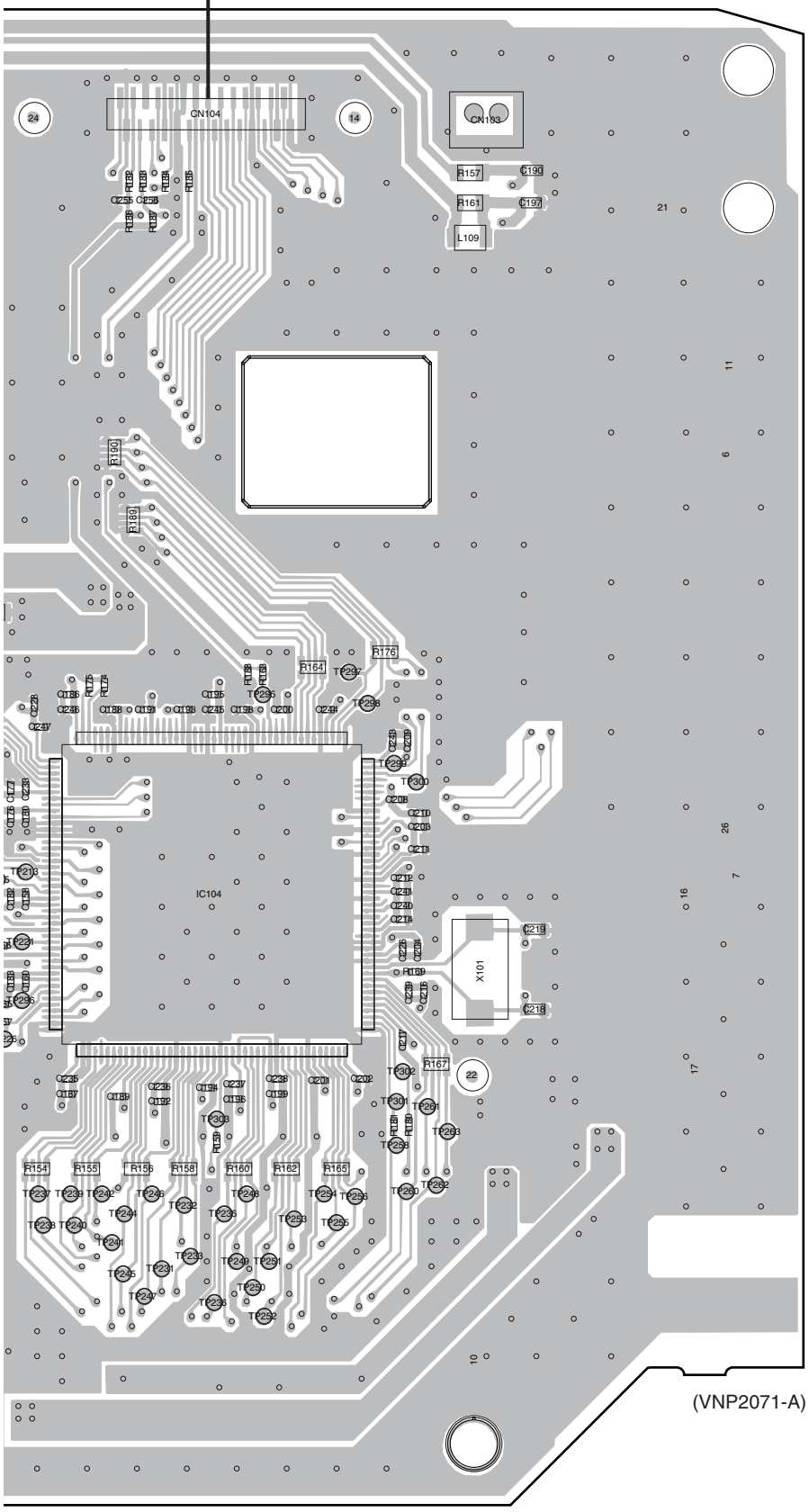
**E** VDEC ASSY
(VWV2304)



SIDE A

D CN4701

CN104




(VNP2071-A)

**SIDE B**

# E VDEC ASSY (VWV2304)

CN104

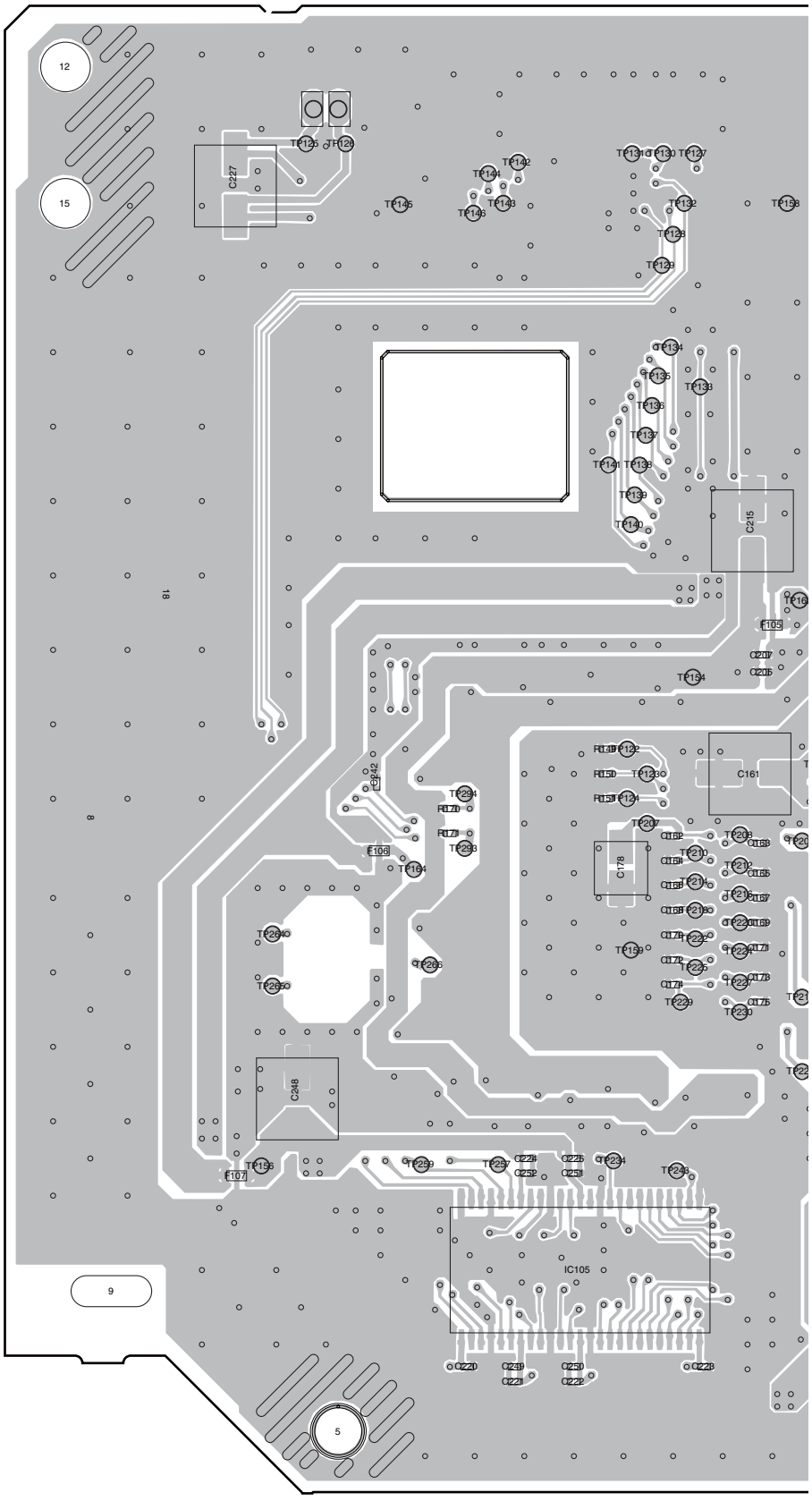
IC Q

IC102

Q103
Q107

Q102
Q106

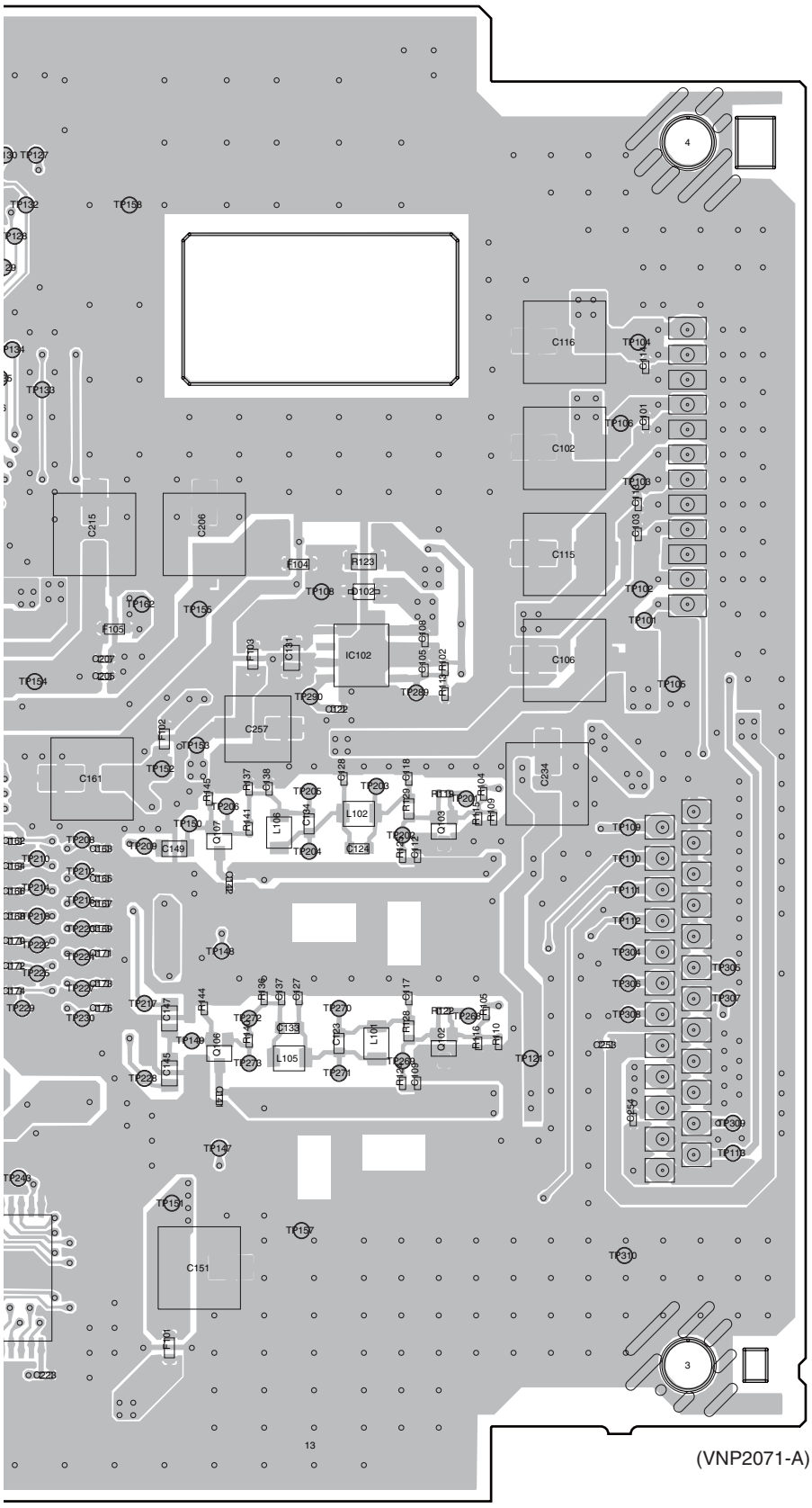
IC105



**SIDE B**

A B C D E F

]



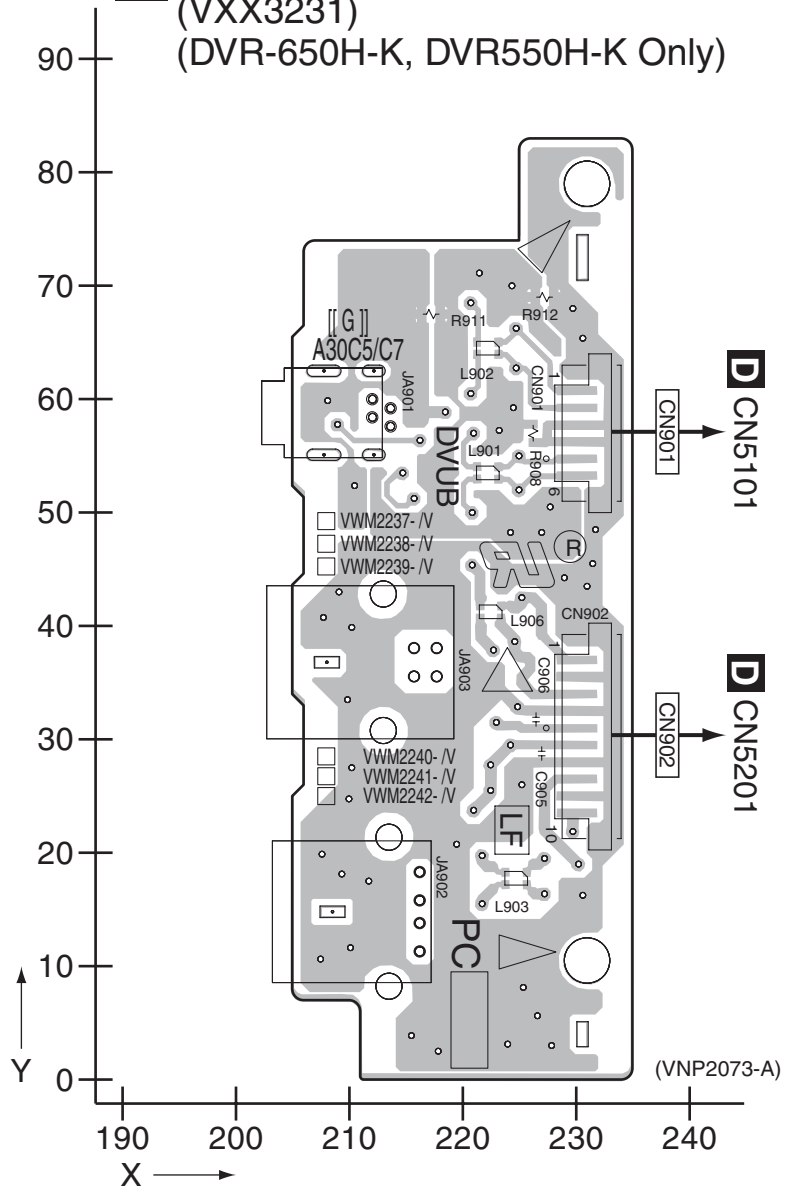

(VNP2071-A)

## 11.6 SERVICE DVUB ASSY

SIDE A

SIDE A

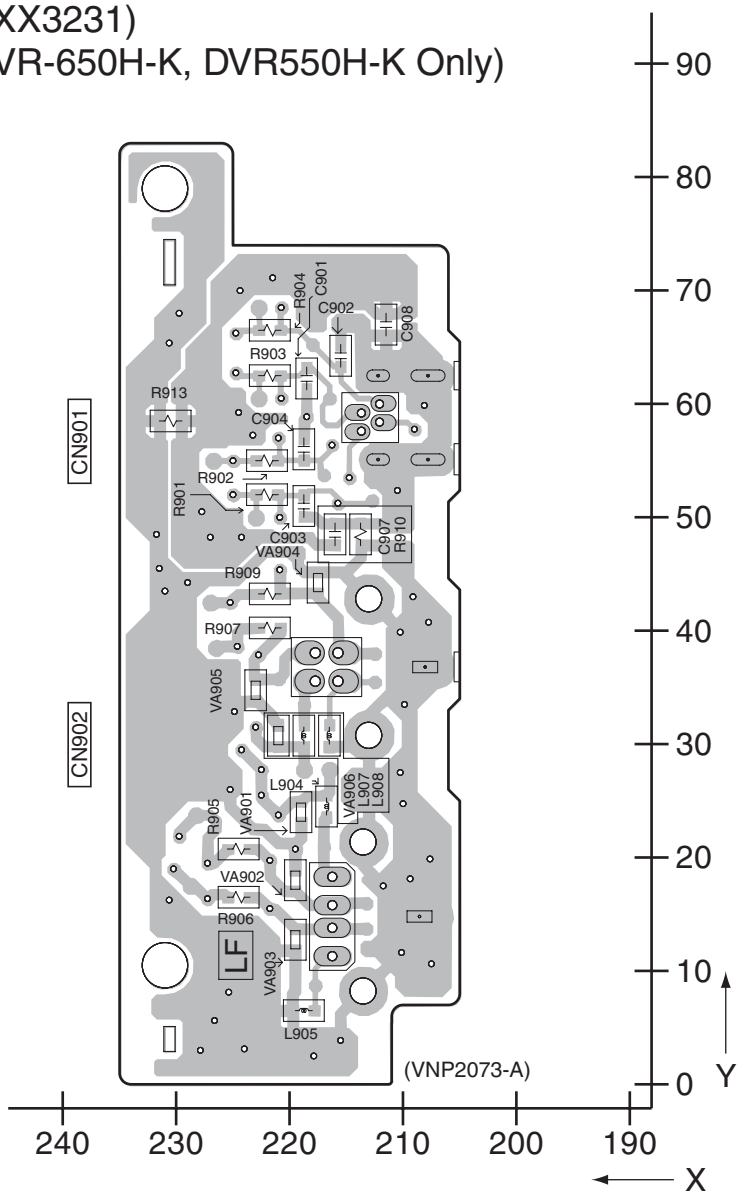
F SERVICE DVUB ASSY
(VXX3231)
(DVR-650H-K, DVR550H-K Only)



SIDE B

SIDE B

## F SERVICE DVUB ASSY
## (VXX3231)
## (DVR-650H-K, DVR550H-K Only)



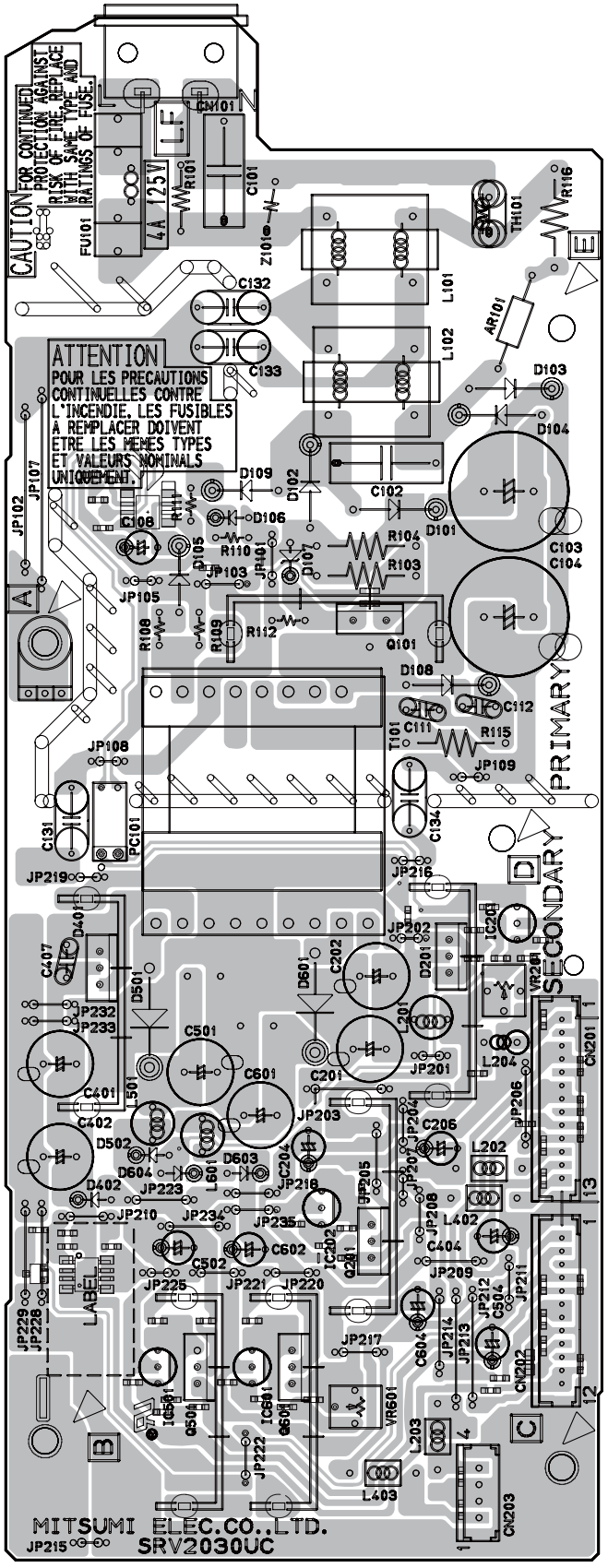
# 11.7 POWER SUPPLY ASSY

**SIDE A**

**G** POWER SUPPLY ASSY
(VWR1408)

**SIDE A**

IC Q


CAUTION FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE AND RATINGS OF FUSE.
ATTENTION
POUR LES PRECAUTIONS CONTINUELLES CONTRE L'INCENDIE, LES FUSIBLES À REMPLACER DOIVENT ETRE LES MEMES TYPES ET VALEURS NOMINALS UNIQUEMENT.
PRIMARY
SECONDARY
MITSUMI ELEC.CO.,LTD.
SRV2030UC
LABEL

Q101

IC201

IC202 Q201

IC501 IC601 Q501 Q601

**G**

SIDE B

# G POWER SUPPLY ASSY (VWR1408)

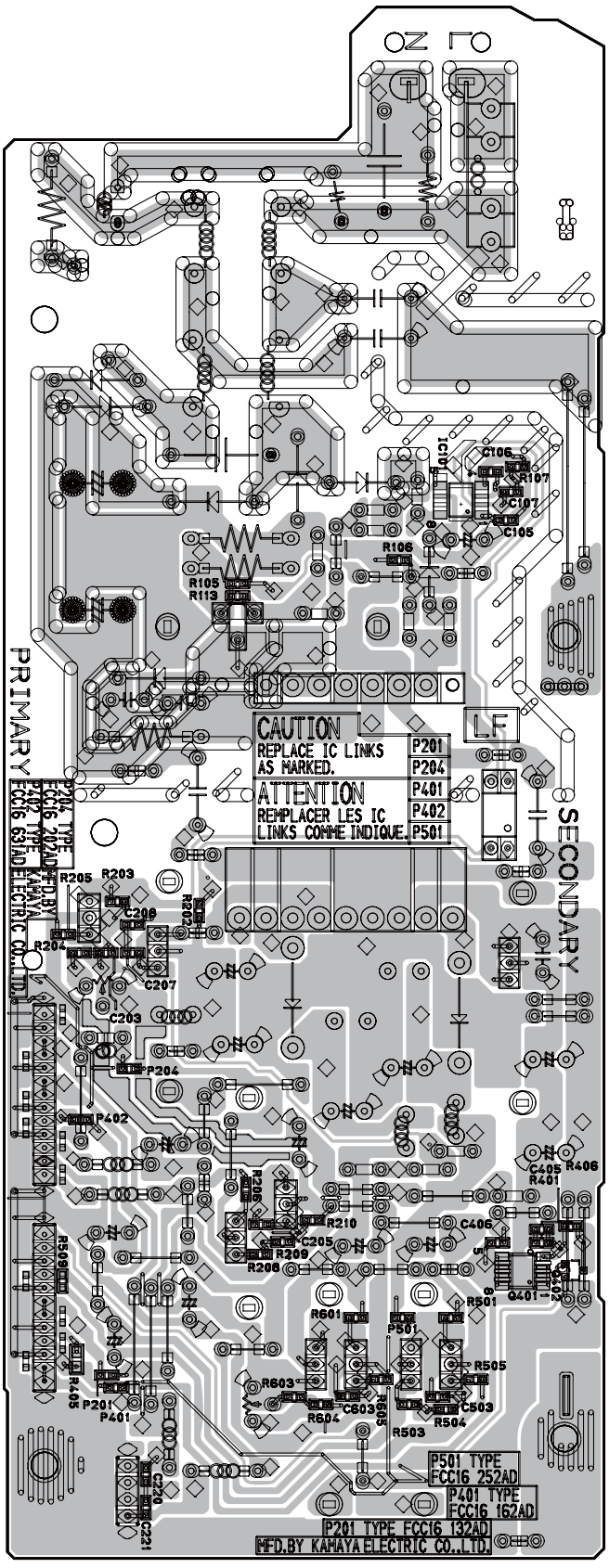
SIDE B

IC

Q

IC101

Q402
Q401






5 6 7 8

# 12. PCB PARTS LIST

*NOTES:* ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*

● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

*Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).*

*560 Ω → 56 x 10[1] → 561 ..... RD1/4PU 5 6 1 J*
*47k Ω → 47 x 10[3] → 473 ..... RD1/4PU 4 7 3 J*
*0.5 Ω → R50 ..... RN2H R 5 0 K*
*1 Ω → 1R0 ..... RS1P 1 R 0 K*

*Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).*

*5.62k Ω → 562 x 10[1] → 5621 ..... RN1/4PC 5 6 2 1 F*

● *Meaning of the figures and others in the parentheses in the parts list.*

*Example) IC 301 is on the point (face A, 91 of x-axis, and 111 of y-axis) of the corresponding PC board.*

*IC 301 (A, 91, 111) IC NJM2068V*

## LIST OF ASSEMBLIES

| Mark | No. | Description | Part No. |
|---|---|---|---|
| NSP | 1.. | TUJB ASSY (DVR-650H-K, DVR-550H-K) | VWM2437 |
| NSP | 1.. | TUJB ASSY (DVR-450H-S) | VWM2438 |
| | 2.. | SERVICE TURB ASSY | VXX3251 |
| | 2.. | SERVICE DVUB ASSY (DVR-650H-K, DVR-550H-K Only) | VXX3231 |
| NSP | 1.. | FLKB ASSY | VWM2434 |
| | 2.. | SERVICE FLKY ASSY | VXX3226 |
| | 3.. | FLKY ASSY | |
| | 3.. | KEYB ASSY | |
| | 2.. | SERVICE FRJB ASSY | VXX3227 |
| | 1.. | VDEC ASSY | VWV2304 |
| | 1.. | SERVICE MAIN ASSY (DVR-650H-K, DVR-550H-K) | VXX3242 |
| | 1.. | SERVICE MAIN ASSY (DVR-450H-S) | VXX3240 |
| ⚠ | 1.. | POWER SUPPLY ASSY | VWR1408 |

| Mark | No. | Description | Part No. |
|---|---|---|---|

## A SERVICE TURB ASSY

### MISCELLANEOUS

| | | | |
|---|---|---|---|
| | IC 101 | (A,201,131) MICROCOMPUTER IC | PMC022A8 |
| | IC 102 | (A,225,166) RESET IC | BD4846G |
| | IC 104 | (A,175,152) IC | TC7MB3257FK |
| ⚠ | IC 150 | (B,229,147) FUSE | CEK1278 |
| ⚠ | IC 317 | (B,167,59) FUSE | CEK1278 |
| | IC 401 | (A,94,122) IC FOR DVD REC | HA118326APFR |
| | IC 402 | (A,119,99) OP-AMP IC | BA4560RF |
| | Q 101 | (A,218,157) DIGITAL TRANSISTOR | DTC124EUA |
| | Q 201 | (B,196,68) TRANSISTOR | 2SD2114K |
| | Q 303 | (A,153,183) TRANSISTOR | UMD2N |
| | Q 304 | (A,160,180) TRANSISTOR | 2SD2153 |
| | Q 305 | (B,179,66) TRANSISTOR | UMD2N |
| | Q 306 | (B,185,66) TRANSISTOR | 2SC2411K |
| | Q 307 | (B,170,59) TRANSISTOR | UMD2N |
| | Q 308 | (B,170,67) TRANSISTOR | 2SC2411K |
| | Q 309 | (B,163,56) TRANSISTOR | 2SC5876 |
| | Q 310 | (B,159,69) TRANSISTOR | 2SC4081 |
| | Q 311 | (B,156,60) CHIP TRANSISTOR | HN1A01FU |
| | Q 403 | (A,94,99) TRANSISTOR | 2SA1576A |
| | Q 404 | (A,93,83) TRANSISTOR | UMD2N |
| | Q 405 | (A,90,99) TRANSISTOR | 2SC4081 |
| | Q 406 | (A,42,78) TRANSISTOR | 2SD2114K |
| | Q 407 | (A,42,97) TRANSISTOR | 2SD2114K |
| | Q 408 | (A,42,84) TRANSISTOR | 2SD2114K |
| | Q 409 | (A,48,100) TRANSISTOR | 2SD2114K |
| | Q 410 | (A,87,96) TRANSISTOR | 2SC4081 |
| | Q 602 | (B,59,163) TRANSISTOR | 2SA1576A |
| | Q 603 | (B,66,167) TRANSISTOR | 2SC4081 |
| | D 101 | (A,221,164) DIODE | 1SS355 |
| | D 102 | (A,218,163) DIODE | 1SS355 |
| | D 103 | (A,150,63) DIODE | 1SS355 |
| | D 104 | (B,167,176) DIODE | 1SR154-400 |
| | D 110 | (B,174,176) DIODE | 1SS352 |
| | D 201 | (B,189,62) DIODE | 1SS355 |
| | D 301 | (B,172,48) DIODE | UDZS15(B) |
| | D 302 | (B,176,72) DIODE | UDZS9R1(B) |
| | D 303 | (B,160,54) DIODE | 1SS355 |
| | D 304 | (B,174,69) DIODE | 1SS355 |
| | D 401 | (A,107,96) DIODE | UDZS11(B) |
| | D 402 | (A,74,150) DIODE | UDZS6R8(B) |
| | D 418 | (B,93,79) DIODE | 1SS355 |
| | D 419 | (A,97,84) DIODE | 1SS355 |
| | D 701 | (B,29,33) DIODE | 1SS355 |
| | L 201 | (A,192,60) RADIAL INDUCTOR | ATH1109 |
| | L 304 | (A,160,65) RADIAL INDUCTOR | LFCA331J |
| | L 305 | (B,164,46) INDUCTOR | CTF1399 |
| | L 602 | (B,86,172) INDUCTOR | CTF1399 |
| | L 604 | (B,43,172) INDUCTOR | CTF1306 |
| | L 605 | (B,47,172) INDUCTOR | CTF1306 |
| | JA 402 | (A,17,78) 9P PIN JACK | VKB1250 |
| | JA 403 | (A,17,132) JACK | VKB1183 |
| | JA 701 | (A,18,25) REMOCON JACK | RKN1004 |
| | KN 101 | (A,131,184) WRAPPING TERMINAL | VNF1084 |
| | KN 102 | (A,192,46) WRAPPING TERMINAL | VNF1084 |
| | X 101 | (A,204,157) CRYSTAL OSCILLATOR | CSS1653 |
| | X 102 | (A,210,156) CRYSTAL RESONATOR 32 KHZ | VSS1197 |
| | CN 101 | (A,35,23) 40P CONNECTOR | VKN2007 |
| | CN 103 | (A,235,159) 9P CONNECTOR | VKN2015 |
| | CN 105 | (A,232,148) CONNECTOR | HLEM17S-1 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | CN106 (A,238,107) | CONNECTOR | HLEM11S-1 |
| | CN302 (A,151,35) | CONNECTOR | HLEM24R-1 |
| | U 601 (A,26,178) | TV TUNER PACK | VXF1103 |
| ⚠ | BT 101 (A,179,180) | LITHIUM BATTERY | VEM1037 |
| | 401 | 2P 4PIN MINIDIN(S) | AKP1234 |

## RESISTORS

| | | | |
|---|---|---|---|
| R | 101 (A,187,125) | | RS1/16S101J |
| R | 102 (A,182,123) | | RS1/16S101J |
| R | 103 (A,187,118) | | RS1/16S101J |
| R | 104 (A,224,158) | | RS1/16S473J |
| R | 105 (A,215,149) | | RS1/16S101J |
| R | 106 (A,221,158) | | RS1/16S0R0J |
| R | 107 (A,224,159) | | RS1/16S103J |
| R | 109 (A,212,144) | | RS1/16S331J |
| R | 110 (A,211,144) | | RS1/16S101J |
| R | 111 (A,212,149) | | RS1/16S101J |
| R | 112 (A,222,161) | | RS1/16S103J |
| R | 113 (A,219,161) | | RS1/16S0R0J |
| R | 116 (B,208,153) | | RS1/16S0R0J |
| R | 117 (A,204,145) | | RS1/16S105J |
| R | 118 (B,201,150) | | RS1/16S0R0J |
| R | 119 (A,192,167) | CARBON FILM RESISTOR | RD1/4PU393J |
| R | 120 (A,197,163) | CARBON FILM RESISTOR | RD1/4PU682J |
| R | 123 (A,197,149) | | RS1/16S101J |
| R | 124 (A,197,146) | | RS1/16S101J |
| R | 126 (A,194,147) | | RS1/16S101J |
| R | 129 (A,195,149) | | RS1/16S101J |
| R | 130 (B,235,155) | | RS1/16S0R0J |
| R | 131 (A,190,153) | | RS1/16S104J |
| R | 134 (A,187,148) | | RS1/16S102J |
| R | 135 (A,185,152) | | RS1/16S102J |
| R | 136 (A,189,148) | | RS1/16S102J |
| R | 139 (A,184,149) | | RS1/16S682J |
| R | 140 (A,182,148) | | RS1/16S101J |
| R | 141 (A,182,151) | | RS1/16S682J |
| R | 142 (A,181,151) | | RS1/16S101J |
| R | 143 (A,183,145) | | RS1/16S101J |
| R | 144 (A,185,139) | | RS1/16S0R0J |
| R | 145 (A,183,130) | | RS1/16S104J |
| R | 150 (A,190,117) | | RS1/16S0R0J |
| R | 151 (A,195,118) | | RS1/16S0R0J |
| R | 152 (A,200,83) | | RS1/16S101J |
| R | 153 (A,198,116) | | RS1/16S101J |
| R | 154 (B,202,113) | | RS1/16S101J |
| R | 155 (A,201,84) | | RS1/16S101J |
| R | 156 (A,201,116) | | RS1/16S101J |
| R | 157 (A,203,117) | | RS1/16S104J |
| R | 158 (A,202,119) | | RS1/16S104J |
| R | 159 (A,205,117) | | RS1/16S0R0J |
| R | 160 (A,206,114) | | RS1/16S101J |
| R | 161 (A,201,108) | | RS1/16S0R0J |
| R | 165 (A,206,117) | | RS1/16S104J |
| R | 168 (A,211,112) | | RS1/16S181J |
| R | 170 (B,205,123) | | RS1/16S104J |
| R | 171 (A,215,114) | | RS1/16S101J |
| R | 172 (A,216,114) | | RS1/16S101J |
| R | 173 (A,218,113) | | RS1/16S104J |
| R | 174 (A,217,111) | | RS1/16S104J |
| R | 175 (A,219,113) | | RS1/16S331J |
| R | 176 (A,220,124) | | RS1/16S102J |
| R | 177 (A,222,126) | | RS1/16S101J |
| R | 178 (A,219,127) | | RS1/16S101J |
| R | 179 (A,222,128) | | RS1/16S101J |
| R | 180 (A,221,132) | | RS1/16S101J |
| R | 181 (A,218,133) | | RS1/16S101J |
| R | 182 (A,221,134) | | RS1/16S101J |
| R | 183 (A,218,135) | | RS1/16S101J |
| R | 184 (A,221,136) | | RS1/16S101J |
| R | 185 (A,218,137) | | RS1/16S101J |
| R | 186 (A,221,138) | | RS1/16S101J |
| R | 188 (A,221,141) | | RS1/16S331J |
| R | 189 (A,221,142) | | RS1/16S471J |
| R | 190 (A,224,91) | | RS1/16S104J |
| R | 193 (B,230,171) | | RS1/16S104J |
| R | 194 (B,236,171) | | RS1/16S104J |
| R | 195 (B,228,171) | | RS1/16S104J |
| R | 196 (B,238,171) | | RS1/16S101J |
| R | 197 (A,52,22) | | RS1/16S0R0J |
| R | 199 (A,209,110) | | RS1/16S101J |
| R | 200 (A,221,144) | | RS1/16S101J |
| R | 204 (A,182,136) | | RS1/16S101J |
| R | 205 (A,185,134) | | RS1/16S101J |
| R | 211 (B,179,175) | | RS1/16S102J |
| R | 212 (A,196,96) | | RS1/16S0R0J |
| R | 213 (A,192,156) | | RS1/16S103J |
| R | 218 (A,184,60) | | RS1/10S0R0J |
| R | 219 (B,195,74) | | RS1/16S332J |
| R | 220 (B,196,71) | | RS1/16S222J |
| R | 221 (A,177,145) | | RS1/16S101J |
| R | 222 (A,184,140) | | RS1/16S0R0J |
| R | 223 (A,174,157) | | RS1/16S101J |
| R | 224 (A,177,156) | | RS1/16S101J |
| R | 228 (A,196,160) | | RS1/16S0R0J |
| R | 251 (B,180,44) | | RS1/10S0R0J |
| R | 302 (B,176,55) | | RS1/10S0R0J |
| R | 303 (B,179,55) | | RS1/10S0R0J |
| R | 305 (B,158,180) | | RS1/16S330J |
| R | 306 (B,180,62) | | RS1/16S330J |
| R | 307 (A,161,103) | | RS1/10S0R0J |
| R | 308 (A,161,101) | | RS1/10S0R0J |
| R | 309 (B,170,56) | | RS1/16S152J |
| R | 310 (B,162,61) | | RS1/16S472J |
| R | 311 (B,162,71) | | RS1/16S821J |
| R | 312 (B,153,58) | | RS1/16S103J |
| R | 313 (B,158,54) | | RS1/16S184J |
| R | 314 (B,154,67) | | RS1/16S223J |
| R | 315 (B,156,54) | | RS1/16S1003F |
| R | 316 (B,154,54) | | RS1/16S2202F |
| R | 318 (B,160,180) | | RS1/16S0R0J |
| R | 401 (A,98,100) | | RS1/10S0R0J |
| R | 404 (A,104,99) | | RS1/10S0R0J |
| R | 407 (A,58,116) | | RS1/10S0R0J |
| R | 408 (A,117,114) | | RS1/16S471J |
| R | 409 (A,115,114) | | RS1/16S681J |
| R | 410 (A,89,106) | | RS1/16S103J |
| R | 411 (A,114,116) | | RS1/16S681J |
| R | 412 (B,90,126) | CHIP RESISTOR | RS1/16S185J |
| R | 413 (A,117,117) | | RS1/16S471J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| R | 414 | (A,115,122) | RS1/16S471J |
| R | 415 | (A,115,124) | RS1/16S471J |
| R | 416 | (A,116,126) | RS1/16S471J |
| R | 417 | (A,116,128) | RS1/16S471J |
| R | 418 | (A,116,130) | RS1/16S471J |
| R | 419 | (A,116,132) | RS1/16S471J |
| R | 420 | (B,91,130) CHIP RESISTOR | RS1/16S185J |
| R | 421 | (A,112,135) | RS1/16S105J |
| R | 422 | (A,111,113) | RS1/16S103J |
| R | 423 | (A,117,135) | RS1/10S75R0F |
| R | 424 | (A,104,134) | RS1/16S105J |
| R | 425 | (B,98,126) | RS1/16S104J |
| R | 426 | (A,107,140) | RS1/10S75R0F |
| R | 428 | (B,97,131) | RS1/16S0R0J |
| R | 430 | (A,100,143) | RS1/16S105J |
| R | 431 | (A,95,136) | RS1/16S105J |
| R | 432 | (A,93,145) | RS1/16S105J |
| R | 433 | (B,48,68) CHIP TYPE RESISTOR | RS1/10S68R0F |
| R | 434 | (B,46,68) | RS1/10S0R0J |
| R | 436 | (A,78,119) | RS1/16S101J |
| R | 437 | (A,78,121) | RS1/16S101J |
| R | 438 | (A,73,147) | RS1/10S0R0J |
| R | 439 | (B,90,125) | RS1/16S185J |
| R | 441 | (A,97,153) | RS1/10S75R0F |
| R | 442 | (A,91,150) | RS1/10S75R0F |
| R | 443 | (A,105,143) | RS1/10S75R0F |
| R | 444 | (A,99,149) | RS1/10S75R0F |
| R | 445 | (A,101,151) | RS1/10S75R0F |
| R | 446 | (A,103,144) | RS1/10S75R0F |
| R | 447 | (A,94,151) | RS1/10S75R0F |
| R | 448 | (A,75,147) | RS1/10S0R0J |
| R | 450 | (B,39,142) | RS1/16S101J |
| R | 451 | (B,41,142) | RS1/16S104J |
| R | 452 | (B,43,156) | RS1/16S104J |
| R | 453 | (A,124,103) | RS1/16S8201F |
| R | 454 | (A,106,108) | RS1/16S1002F |
| R | 455 | (A,94,103) | RS1/16S470J |
| R | 458 | (A,96,98) | RS1/16S471J |
| R | 459 | (A,89,102) | RS1/16S471J |
| R | 460 | (A,91,103) | RS1/16S470J |
| R | 461 | (A,88,92) | RS1/16S681J |
| R | 462 | (A,108,105) | RS1/16S1002F |
| R | 463 | (A,112,100) | RS1/16S8201F |
| R | 464 | (B,40,39) CHIP TYPE RESISTOR | RS1/10S68R0F |
| R | 465 | (A,88,100) | RS1/16S471J |
| R | 466 | (B,37,39) | RS1/10S0R0J |
| R | 467 | (B,41,56) CHIP TYPE RESISTOR | RS1/10S68R0F |
| R | 468 | (B,40,45) CHIP TYPE RESISTOR | RS1/10S68R0F |
| R | 469 | (B,37,45) | RS1/10S0R0J |
| R | 470 | (B,43,50) CHIP TYPE RESISTOR | RS1/10S68R0F |
| R | 471 | (B,41,50) | RS1/10S0R0J |
| R | 472 | (B,41,89) CHIP TYPE RESISTOR | RS1/10S68R0F |
| R | 473 | (B,39,89) | RS1/10S0R0J |
| R | 474 | (B,48,80) CHIP TYPE RESISTOR | RS1/10S68R0F |
| R | 475 | (B,46,80) | RS1/10S0R0J |
| R | 476 | (B,46,74) CHIP TYPE RESISTOR | RS1/10S68R0F |
| R | 477 | (B,41,74) | RS1/10S0R0J |
| R | 478 | (B,39,61) CHIP TYPE RESISTOR | RS1/10S68R0F |
| R | 479 | (A,45,79) | RS1/16S471J |
| R | 480 | (B,37,61) | RS1/10S0R0J |
| R | 481 | (B,38,56) | RS1/10S0R0J |
| R | 482 | (B,35,75) | RS1/16S101J |
| R | 483 | (A,47,84) | RS1/16S471J |
| R | 484 | (A,42,81) | RS1/16S102J |
| R | 485 | (B,49,83) | RS1/16S223J |
| R | 486 | (A,44,100) | RS1/16S102J |
| R | 487 | (A,41,87) | RS1/16S102J |
| R | 488 | (A,42,94) | RS1/16S471J |
| R | 489 | (B,48,94) | RS1/16S223J |
| R | 490 | (B,34,89) | RS1/16S101J |
| R | 491 | (A,50,100) | RS1/16S102J |
| R | 492 | (A,48,97) | RS1/16S471J |
| R | 493 | (B,43,83) | RS1/16S101J |
| R | 494 | (B,43,96) | RS1/16S101J |
| R | 495 | (B,39,156) | RS1/16S101J |
| R | 496 | (B,43,150) | RS1/16S104J |
| R | 497 | (B,39,150) | RS1/16S101J |
| R | 498 | (B,39,164) | RS1/16S101J |
| R | 499 | (B,43,162) | RS1/16S104J |
| R | 601 | (B,64,172) | RS1/16S0R0J |
| R | 604 | (B,55,174) | RS1/16S0R0J |
| R | 605 | (B,83,170) | RS1/16S103J |
| R | 606 | (B,77,172) | RS1/16S103J |
| R | 607 | (B,56,166) | RS1/16S102J |
| R | 609 | (B,26,174) | RS1/16S0R0J |
| R | 610 | (B,54,174) | RS1/16S0R0J |
| R | 611 | (B,59,174) | RS1/16S0R0J |
| R | 613 | (B,127,173) | RS1/16S0R0J |
| R | 614 | (B,129,176) | RS1/16S0R0J |
| R | 635 | (B,65,175) | RS1/16S0R0J |
| R | 636 | (B,55,187) | RS1/16S0R0J |
| R | 637 | (B,77,185) | RS1/16S0R0J |
| R | 701 | (B,36,34) | RS1/16S224J |
| R | 702 | (B,27,32) | RS1/16S221J |
| R | 704 | (B,31,32) | RS1/16S221J |

## CAPACITORS

| | | | |
|---|---|---|---|
| C | 104 | (A,216,147) | CEAT220M25 |
| C | 105 | (A,223,156) | CKSRYF104Z25 |
| C | 106 | (A,226,169) | CKSRYF104Z25 |
| C | 107 | (A,209,144) | CCSRCH331J50 |
| C | 109 | (A,218,155) | CKSRYF104Z25 |
| C | 110 | (A,219,164) | CKSRYB105K10 |
| C | 111 | (B,214,159) | CCSRCH120J50 |
| C | 112 | (B,210,159) | CCSRCH120J50 |
| C | 113 | (A,201,145) | CKSRYF105Z10 |
| C | 114 | (B,201,158) | CCSRCH150J50 |
| C | 115 | (B,200,153) | CCSRCH150J50 |
| C | 120 | (B,165,179) | CKSRYF104Z25 |
| C | 121 | (B,237,153) | CKSRYF105Z10 |
| C | 122 | (B,173,181) | CKSRYF105Z10 |
| C | 123 | (A,171,178) | CEAT221M6R3 |
| C | 126 | (A,187,132) | CKSRYF104Z25 |
| C | 131 | (A,192,119) | CKSRYF104Z25 |
| C | 132 | (A,193,116) | CKSRYF104Z25 |
| C | 133 | (A,197,110) | CKSRYF104Z25 |
| C | 134 | (A,203,106) | CKSRYF104Z25 |
| C | 136 | (A,213,121) | CKSRYF105Z10 |
| C | 138 | (A,221,119) | CEAT2R2M50 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 139 (A,216,126) | | CKSRYF104Z25 |
| C | 140 (A,216,130) | | CKSRYF104Z25 |
| C | 141 (A,172,157) | | CKSRYF105Z10 |
| C | 142 (A,172,159) | | CCSRCH102J50 |
| C | 147 (B,131,159) | | CKSRYF104Z25 |
| C | 152 (A,196,97) | | CKSRYF105Z10 |
| C | 154 (B,229,143) | | CKSRYF104Z25 |
| C | 155 (B,239,153) | | CCSRCH102J50 |
| C | 202 (B,186,59) | | CKSRYF104Z25 |
| C | 204 (A,187,55) | | CEAT101M16 |
| C | 205 (A,184,50) | | CEAT220M25 |
| C | 206 (B,193,72) | | CCSRCH471J50 |
| C | 208 (B,181,41) | | CKSRYB104K16 |
| C | 211 (A,191,150) | | CKSRYF104Z25 |
| C | 301 (B,171,42) | | CKSRYF104Z25 |
| C | 302 (B,175,42) | | CKSRYF104Z25 |
| C | 303 (A,170,46) | | CEAT101M16 |
| C | 304 (A,176,45) | | CEAT101M16 |
| C | 309 (B,164,182) | | CKSRYF104Z25 |
| C | 310 (B,165,189) | | CKSRYF104Z25 |
| C | 311 (A,162,188) | | CEAT221M16 |
| C | 312 (A,149,182) | | CEAT101M16 |
| C | 313 (B,179,60) | | CKSRYF105Z10 |
| C | 314 (B,179,70) | | CKSRYF104Z25 |
| C | 315 (A,181,73) | | CEAT101M16 |
| C | 316 (A,188,71) | | CEAT101M16 |
| C | 317 (B,170,54) | | CKSRYF104Z25 |
| C | 318 (B,170,64) | | CKSRYF104Z25 |
| C | 319 (A,175,65) | | CEAT101M16 |
| C | 320 (A,167,71) | | CEAT101M16 |
| C | 321 (B,166,61) | | CKSRYF104Z25 |
| C | 322 (B,164,59) | | CCSRCH101J50 |
| C | 323 (B,163,53) | CERAMIC CAPACITOR | CKSQYF105Z50 |
| C | 324 (B,156,64) | | CKSRYF104Z25 |
| C | 326 (A,159,50) | | CEAT100M50 |
| C | 328 (B,167,43) | | CKSRYF104Z50 |
| C | 329 (B,146,184) | | CKSRYF104Z25 |
| C | 401 (A,100,109) | | CKSRYF105Z10 |
| C | 402 (A,108,102) | | CKSRYF104Z25 |
| C | 403 (A,104,104) | | CKSRYF104Z25 |
| C | 404 (A,93,111) | | CKSRYF105Z10 |
| C | 406 (A,86,106) | | CKSRYB104K16 |
| C | 407 (A,84,106) | | CKSRYB105K10 |
| C | 408 (A,82,106) | | CKSRYB105K10 |
| C | 409 (A,80,106) | | CKSRYB105K10 |
| C | 410 (A,79,106) | | CKSRYB105K10 |
| C | 411 (A,115,113) | | CKSRYB105K10 |
| C | 412 (A,114,118) | | CKSRYB105K10 |
| C | 413 (B,92,115) | | CKSRYB104K16 |
| C | 414 (A,107,112) | | CKSRYF104Z25 |
| C | 415 (A,109,112) | | CKSRYF104Z25 |
| C | 418 (A,112,120) | | CKSRYF105Z10 |
| C | 419 (A,112,122) | | CKSRYB105K10 |
| C | 420 (A,112,124) | | CKSRYB105K10 |
| C | 421 (A,113,126) | | CKSRYB105K10 |
| C | 422 (A,113,128) | | CKSRYB105K10 |
| C | 423 (A,113,130) | | CKSRYB105K10 |
| C | 424 (A,113,132) | | CKSRYB105K10 |
| C | 425 (A,114,134) | | CKSRYB105K10 |
| C | 426 (A,105,137) | | CKSRYB104K16 |
| C | 427 (A,108,143) | | CKSRYB103K50 |
| C | 428 (A,95,134) | | CKSRYB104K16 |
| C | 429 (A,103,138) | | CKSRYB105K10 |
| C | 430 (A,101,136) | | CKSRYB104K16 |
| C | 431 (A,98,135) | | CKSRYB104K16 |
| C | 432 (A,97,140) | | CKSRYB105K10 |
| C | 434 (A,89,134) | | CKSRYB104K16 |
| C | 435 (A,80,114) | | CKSRYF104Z25 |
| C | 436 (A,79,114) | | CKSRYF104Z25 |
| C | 437 (A,77,112) | | CKSRYF104Z25 |
| C | 438 (A,78,118) | | CKSRYF105Z10 |
| C | 439 (B,87,125) | | CKSRYB104K16 |
| C | 440 (A,88,137) | | CKSRYB104K16 |
| C | 441 (A,81,139) | | CKSRYF105Z10 |
| C | 442 (A,81,135) | | CKSRYF104Z25 |
| C | 443 (A,100,145) | | CKSRYB105K10 |
| C | 444 (A,94,139) | | CKSRYB105K10 |
| C | 445 (A,86,146) | | CKSRYB105K10 |
| C | 446 (A,92,143) | | CKSRYB105K10 |
| C | 447 (A,99,153) | | CKSRYB103K50 |
| C | 448 (A,104,147) | | CKSRYB103K50 |
| C | 452 (A,104,93) | | CEAT101M10 |
| C | 453 (A,92,107) | | CEAT101M10 |
| C | 454 (A,73,113) | | CEAT101M10 |
| C | 455 (A,121,121) | | CEAT4R7M50 |
| C | 456 (A,112,144) | | CEAT1R0M50 |
| C | 457 (A,89,141) | | CEAT100M50 |
| C | 458 (A,73,138) | | CEAT101M10 |
| C | 459 (A,94,96) | | CKSRYF105Z10 |
| C | 461 (B,43,142) | | CCSRCH471J50 |
| C | 462 (B,41,156) | | CCSRCH471J50 |
| C | 463 (B,41,150) | | CCSRCH471J50 |
| C | 464 (A,117,95) | | CKSRYF104Z25 |
| C | 465 (B,41,162) | | CCSRCH471J50 |
| C | 467 (A,88,94) | | CKSRYF105Z10 |
| C | 468 (A,111,114) | | CKSRYF104Z25 |
| C | 469 (A,110,116) | | CKSRYF104Z25 |
| C | 470 (B,34,143) | | CCSRCH102J50 |
| C | 471 (A,122,107) | | CEAT100M50 |
| C | 472 (A,127,96) | | CEAT100M50 |
| C | 473 (A,117,86) | | CEAT101M16 |
| C | 474 (A,112,107) | | CEAT100M50 |
| C | 475 (A,113,95) | | CEAT100M50 |
| C | 476 (B,48,52) | | CKSRYB103K50 |
| C | 477 (B,34,157) | | CCSRCH102J50 |
| C | 478 (A,58,68) | ELECT. CAPACITOR | CEAT102M6R3 |
| C | 482 (B,33,75) | | CCSRCH471J50 |
| C | 483 (A,60,48) | ELECT. CAPACITOR | CEAT102M6R3 |
| C | 484 (B,34,85) | | CCSRCH471J50 |
| C | 485 (B,46,57) | | CKSRYB103K50 |
| C | 486 (A,60,57) | ELECT. CAPACITOR | CEAT102M6R3 |
| C | 487 (A,49,91) | ELECT. CAPACITOR | CEAT102M6R3 |
| C | 488 (A,56,78) | ELECT. CAPACITOR | CEAT471M6R3 |
| C | 489 (A,49,73) | ELECT. CAPACITOR | CEAT471M6R3 |
| C | 490 (A,48,62) | ELECT. CAPACITOR | CEAT102M6R3 |
| C | 491 (A,57,85) | | CEAT470M16 |
| C | 492 (A,99,81) | | CEAT221M6R3 |
| C | 493 (B,41,83) | | CCSRCH471J50 |
| C | 495 (A,57,96) | | CEAT470M16 |
| C | 496 (A,89,135) | | CKSRYF104Z25 |
| C | 497 (B,41,96) | | CCSRCH471J50 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 498 (B,34,148) | | CCSRCH102J50 |
| C | 499 (B,34,162) | | CCSRCH102J50 |
| C | 603 (B,51,174) | | CKSRYB222K50 |
| C | 604 (B,61,174) | | CCSRCH101J50 |
| C | 605 (B,43,174) | | CCSRCH100D50 |
| C | 606 (B,47,174) | | CCSRCH100D50 |
| C | 607 (A,74,165) | | CEAT1R0M50 |
| C | 609 (A,62,167) | | CEAT101M10 |
| C | 701 (B,39,35) | | CKSRYF105Z50 |
| C | 702 (B,29,29) | | CCSRCH681J50 |
| C | 703 (B,24,31) | | CKSRYF104Z25 |

## B SERVICE FLKY ASSY

### MISCELLANEOUS

| | | | |
|---|---|---|---|
| IC | 101 (B,143,78) | FL DRIVER IC | PT6315 |
| Q | 101 (B,31,57) | DIGITAL TRANSISTOR | DTC124EUA |
| Q | 103 (B,117,59) | DIGITAL TRANSISTOR | DTC124EUA |
| Q | 104 (B,204,73) | TRANSISTOR | 2SC5712 |
| Q | 105 (B,200,68) | TRANSISTOR | 2SA1576A |
| Q | 106 (B,210,61) | TRANSISTOR | 2SC4081 |
| Q | 201 (B,99,15) | DIGITAL TRANSISTOR | DTC124EUA |
| Q | 202 (B,108,16) | DIGITAL TRANSISTOR | DTC124EUA |
| Q | 204 (B,91,16) | DIGITAL TRANSISTOR | DTC124EUA |
| Q | 205 (B,117,16) | DIGITAL TRANSISTOR | DTC124EUA |
| Q | 206 (B,83,18) | DIGITAL TRANSISTOR | DTC124EUA |
| D | 101 (A,22,61) | LED(BLUE) | SLR343BC4T(JKLM) |
| D | 103 (A,39,61) | LED(ORANGE) | SLR-343DC(NPQ) |
| D | 107 (B,221,41) | DIODE | RF101L2S |
| D | 108 (B,201,81) | DIODE | UDZS15(B) |
| D | 109 (B,200,73) | DIODE | 1SS355 |
| D | 110 (B,212,71) | DIODE | RF101L2S |
| D | 111 (B,209,79) | DIODE | UDZS2R4(B) |
| D | 112 (B,198,83) | DIODE | UDZS13(B) |
| D | 113 (A,120,62) | LED(RED) | SLR-343VC(NPQ) |
| D | 205 (A,88,22) | LED(RED) | SLR-343VC(NPQ) |
| D | 212 (A,75,22) | LED(RED) | SLR-343VC(NPQ) |
| L | 101 (A,197,68) | AXIAL INDUCTOR | LAU220J |
| V | 101 (A,95,89) | FLUORESCENT TUBE | VAW1091 |
| S | 103 (A,91,45) | SWITCH | VSG1024 |
| S | 104 (A,91,39) | SWITCH | VSG1024 |
| S | 105 (A,65,39) | SWITCH | VSG1024 |
| S | 106 (A,116,39) | SWITCH | VSG1024 |
| S | 107 (A,49,39) | SWITCH | VSG1024 |
| S | 108 (A,116,45) | SWITCH | VSG1024 |
| S | 109 (A,49,45) | SWITCH | VSG1024 |
| S | 110 (A,210,38) | SWITCH | VSG1024 |
| S | 111 (A,65,45) | SWITCH | VSG1024 |
| S | 112 (A,80,72) | SWITCH | VSG1024 |
| S | 201 (A,147,46) | SWITCH | VSG1024 |
| S | 202 (A,77,10) | SWITCH | VSG1024 |
| T | 101 (A,220,51) | TRANSFORMER | VTT1171 |
| CN | 101 | CONNECTOR | 9604S-17C |
| | 103 | REMOTE RECEIVER UNIT | GP1UM28XK0VF |
| | 102 | HOUSING ASS'Y(9P) | VKP2393 |

### RESISTORS

| | | | |
|---|---|---|---|
| R | 101 (B,35,57) | | RS1/16S182J |
| R | 104 (B,194,59) | | RS1/16S0R0J |
| R | 109 (B,48,55) | | RS1/16S151J |
| R | 110 (B,126,74) | | RS1/16S470J |
| R | 111 (B,128,74) | | RS1/16S470J |
| R | 112 (B,124,74) | | RS1/16S470J |
| R | 113 (B,133,72) | | RS1/16S823J |
| R | 114 (B,46,56) | | RS1/16S0R0J |
| R | 115 (B,85,72) | | RS1/16S103J |
| R | 117 (B,197,74) | | RS1/16S274J |
| R | 118 (B,191,75) | | RS1/16S102J |
| R | 119 (B,208,73) | | RS1/16S273J |
| R | 120 (B,202,65) | | RS1/16S103J |
| R | 121 (B,215,58) | | RS1/10S221J |
| R | 122 (B,215,56) | | RS1/16S122J |
| R | 123 (B,210,83) | | RS1/16S103J |
| R | 124 (B,204,61) | | RS1/16S102J |
| R | 125 (B,79,43) | | RS1/16S103J |
| R | 126 (B,81,43) | | RS1/16S103J |
| R | 127 (B,74,41) | | RS1/16S222J |
| R | 128 (B,109,42) | | RS1/16S222J |
| R | 129 (B,72,41) | | RS1/16S222J |
| R | 130 (B,111,40) | | RS1/16S222J |
| R | 131 (B,69,43) | | RS1/16S332J |
| R | 132 (B,113,40) | | RS1/16S332J |
| R | 133 (B,117,64) | | RS1/16S271J |
| R | 135 (B,201,52) | | RS1/16S562J |
| R | 137 (B,219,83) | | RS1/16S0R0J |
| R | 138 (B,191,83) | | RS1/16S0R0J |
| R | 144 (B,149,68) | | RS1/16S0R0J |
| R | 148 (B,76,41) | | RS1/16S470J |
| R | 149 (B,87,44) | | RS1/16S470J |
| R | 150 (B,83,72) | | RS1/16S470J |
| R | 151 (B,61,49) | | RS1/16S0R0J |
| R | 204 (B,81,9) | | RS1/16S222J |
| R | 205 (B,148,32) | | RS1/16S222J |
| R | 221 (B,79,24) | | RS1/16S271J |
| R | 222 (B,90,27) | | RS1/16S271J |
| R | 224 (B,109,26) | | RS1/16S271J |
| R | 226 (B,98,26) | | RS1/16S271J |
| R | 228 (B,123,19) | | RS1/16S271J |

### CAPACITORS

| | | | |
|---|---|---|---|
| C | 102 (B,39,54) | | CKSRYF104Z25 |
| C | 103 (B,95,83) | | CKSRYB103K50 |
| C | 104 (B,215,86) | | CKSRYB103K50 |
| C | 106 (B,147,68) | | CKSRYF104Z25 |
| C | 107 (B,155,82) | | CKSRYF104Z50 |
| C | 112 (B,132,80) | | CKSRYF104Z25 |
| C | 113 (A,206,52) | | CEAL101M10 |
| C | 115 (B,199,65) | | CKSRYF104Z25 |
| C | 116 (A,199,61) | | CEJQ101M16 |
| C | 117 (B,206,64) | | CKSRYB223K50 |
| C | 118 (A,216,61) | ELECTR. CAPACITOR | CEAL100M50 |
| C | 119 (B,97,35) | | CKSRYF104Z25 |
| C | 120 (B,182,70) | | CKSRYF105Z10 |
| C | 121 (B,210,56) | | CKSRYB103K50 |
| C | 123 (B,106,44) | | CKSRYF104Z25 |
| C | 124 (B,104,45) | | CKSRYF104Z25 |
| C | 127 (B,220,78) | | CKSRYF104Z25 |
| C | 128 (A,221,65) | | CEAL101M10 |
| C | 130 (B,83,68) | | CKSRYF104Z25 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 132 | (B,114,66) | CKSRYF104Z25 |
| C | 201 | (B,148,29) | CKSRYF104Z25 |
| C | 202 | (B,69,28) | CKSRYF104Z25 |
| C | 204 | (B,88,28) | CKSRYF104Z25 |
| C | 205 | (B,96,28) | CKSRYF104Z25 |
| C | 206 | (B,105,28) | CKSRYF104Z25 |
| C | 207 | (B,113,28) | CKSRYF104Z25 |

## C SERVICE FRJB ASSY

### MISCELLANEOUS

| | | | |
|---|---|---|---|
| JA | 301 | (A,211,31) 4P MINIDIN SOCKET(S) | AKP1238 |
| JA | 302 | (A,181,32) 3P PIN JACK | VKB1208 |
| KN | 301 | (A,231,17) WRAPPING TERMINAL | VNF1084 |
| KN | 302 | (A,154,17) WRAPPING TERMINAL | VNF1084 |
| CN | 301 | (A,198,7) CONNECTOR | HLEM11S-1 |

### RESISTORS

| | | | |
|---|---|---|---|
| R | 303 | (B,181,16) | RS1/16S0R0J |
| R | 305 | (B,178,15) | RS1/16S0R0J |
| R | 306 | (B,165,15) | RS1/16S0R0J |

### CAPACITORS

| | | | |
|---|---|---|---|
| C | 303 | (B,181,20) | CCSRCH471J50 |
| C | 305 | (B,162,18) | CCSRCH471J50 |

## D MAIN ASSY(DVR-650H-K, DVR-550H-K)

### MISCELLANEOUS

| | | | |
|---|---|---|---|
| IC | 200 | FLASH ROM IC | SST25V016BCS |
| IC | 201 | SDRAM(64M) | K4S641632K-UC60 |
| IC | 501 | 7CH DRIVER IC | BD7956FS |
| IC | 1001 | DVDR IC | MC-10050F1-107LU1A |
| IC | 1102 | FLASH ROM | VYW2404 |
| IC | 1201 | DDR-SDRAM(512MBIT) | EDD5116AFTA-6B |
| IC | 1221 | DDR-SDRAM(512MBIT) | EDD5116AFTA-6B |
| IC | 1301 | IC | NJM12904V |
| IC | 1302 | IC | NJM12904V |
| IC | 3101 | AD CONVERTER IC | AK5359ET |
| IC | 3201 | IC | PCM1742KE |
| IC | 3202 | OP-AMP IC | UPC4570G2 |
| IC | 3701 | IC | TC7WH34FU |
| IC | 3702 | IC | TC7SH08FUS1 |
| IC | 3707 | RESET IC | PST3813U |
| IC | 4501 | FUSE | CEK1285 |
| IC | 4502 | FUSE | CEK1285 |
| ⚠ IC | 4511 | REGULATOR IC | S-1170B33UC-OTS |
| ⚠ IC | 4521 | REGULATOR IC | S-1170B25UC-OTK |
| ⚠ IC | 4531 | REGULATOR IC | MM1701WH |
| ⚠ IC | 4541 | REGULATOR IC (3.3V) | MM1563DF |
| ⚠ IC | 4552 | REGULATOR IC | S-1170B50UC-OUJ |
| ⚠ IC | 4561 | REGULATOR IC | S-1112B50MC-L7J |
| ⚠ IC | 4562 | REGULATOR IC | S-1112B33MC-L6S |
| ⚠ IC | 4571 | REGULATOR IC | S-1132B18-U5 |
| IC | 4701 | LOGIC IC | TC74VCX245FK |
| IC | 4702 | IC | TC7SZ08FU |
| IC | 4703 | LOGIC IC | TC74VHC125FK |
| IC | 5103 | DV-PHY IC | UPD72852AGB-8EU |
| IC | 5202 | IC | R5523N001B |
| IC | 5203 | IC | TC7SH08FUS1 |
| ⚠ IC | 5204 | REGULATOR IC | R1173H001B |
| IC | 5602 | SATA BRIDGE IC | 88SA8040B1-TBC1 |
| IC | 5801 | HDMI TRANSMITER | SII9002CSU |
| IC | 5802 | IC | TC7MB3257FK |
| Q | 102 | TRANSISTOR | RT1N141U |
| Q | 1801 | TRANSISTOR | 2SA1576A |
| Q | 1811 | TRANSISTOR | 2SA1576A |
| Q | 2501 | TRANSISTOR | 2SA1576A |
| Q | 2502 | TRANSISTOR | 2SA1576A |
| Q | 2503 | TRANSISTOR | 2SA1576A |
| Q | 2504 | TRANSISTOR | 2SA1576A |
| Q | 2505 | TRANSISTOR | 2SA1576A |
| Q | 3301 | TRANSISTOR | 2SA1576A |
| Q | 3302 | TRANSISTOR | 2SC4081 |
| Q | 4581 | TRANSISTOR | 2SC4081 |
| Q | 5701 | TRANSISTOR | 2SC4081 |
| Q | 5801 | CHIP TRANSISTOR | HN1C01FU |
| Q | 5802 | CHIP TR (PNP X 2) | UMB1N |
| Q | 5804 | DIGITAL TRANSISTOR | DTC124EUA |
| Q | 5805 | TRANSISTOR | 2SA1576A |
| Q | 5808 | MOS FET | 2SK2034 |
| Q | 5809 | TRANSISTOR | UMD2N |
| Q | 5810 | CHIP TRANSISTOR | UMF21N |
| D | 101 | LED | SML-310YT |
| D | 3201 | DIODE | DAN202U |
| D | 3711 | CHIP DIODE | RB501V-40 |
| D | 3712 | CHIP DIODE | RB501V-40 |
| D | 4521 | CHIP DIODE | RB501V-40 |
| D | 4552 | CHIP DIODE | RB501V-40 |
| D | 4571 | CHIP DIODE | RB501V-40 |
| L | 105 | CHIP COIL | BTH1103 |
| L | 1001 | EMI FILTER | DTL1106 |
| L | 1002 | EMI FILTER | DTL1106 |
| L | 1003 | EMI FILTER | DTL1106 |
| L | 1004 | EMI FILTER | DTL1106 |
| L | 1005 | INDUCTOR | LCTC150K2125 |
| L | 1021 | EMI FILTER | DTL1106 |
| L | 1022 | EMI FILTER | DTL1106 |
| L | 1023 | EMI FILTER | DTL1106 |
| L | 1024 | EMI FILTER | DTL1106 |
| L | 1025 | EMI FILTER | DTL1106 |
| L | 1801 | CHIP COIL | LCYA390J2520 |
| L | 1811 | INDUCTOR | LCYA150J2520 |
| L | 1821 | EMI FILTER | DTL1106 |
| L | 1831 | EMI FILTER | DTL1106 |
| L | 3301 | CHIP COIL | LCYA180J2520 |
| L | 3302 | INDUCTOR | LCYA100J2520 |
| L | 5101 | INDUCTOR | CTF1305 |
| L | 5122 | EMI FILTER | DTL1106 |
| L | 5201 | COIL | ATH7015 |
| L | 5202 | COIL | ATH7015 |
| L | 5601 | EMI FILTER | DTL1106 |
| L | 5701 | INDUCTOR | CTF1382 |
| L | 5801 | COIL | ATH7022 |
| L | 5802 | COIL | ATH7022 |
| L | 5803 | COIL | ATH7022 |
| L | 5804 | COIL | ATH7022 |
| L | 5805 | EMI FILTER | DTL1106 |
| JA | 5701 | 1P PIN JACK | VKB1159 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| JA | 5801 | HDMI CONNECTOR | AKP1278 |
| X | 101 | CERAMIC RESONATOR | DSS1157 |
| X | 1001 | CRYSTAL RESONATOR | VSS1220 |
| X | 1002 | CRYSTAL RESONATOR | VSS1172 |
| X | 5101 | CRYSTAL | VSS1211 |
| X | 5201 | CRYSTAL | VSS1218 |
| X | 5502 | CRYSTAL | VSS1214 |
| CN | 101 | CONNECTOR 50P | DKN1404 |
| CN | 103 | CONNECTOR 14P | VKN2030 |
| CN | 201 | CONNECTOR 10P | VKN2029 |
| CN | 501 | FFC CONNECTOR | DKN1312 |
| CN | 502 | 4P FFC CONNECTOR | DKN1288 |
| CN | 601 | 5P FFC CONNECTOR | DKN1402 |
| CN | 1401 | 14P CONNECTOR | VKN2030 |
| CN | 1402 | 7P FFC CONNECTOR | RKN1048 |
| CN | 2301 | 40P CONNECTOR | VKN2065 |
| CN | 3801 | 18P CONNECTOR | VKN1811 |
| CN | 4501 | KR CONNECTOR | S13B-PH |
| CN | 4701 | CONNECTOR | VKN2047 |
| CN | 5101 | CONNECTOR | VKN1932 |
| CN | 5201 | CONNECTOR | VKN1936 |
| CN | 5604 | SATA PLUG HEADER | VKN2063 |

## RESISTORS

| Mark | No. | Description | Part No. |
|---|---|---|---|
| R | 104 | | RS1/16SS123J |
| R | 105 | | RS1/16SS0R0J |
| R | 107 | | RS1/16SS473J |
| R | 108 | | RS1/16SS682J |
| R | 109 | | RS1/16SS622J |
| R | 110 | | RS1/16SS102J |
| R | 111 | | RS1/16SS474J |
| R | 112 | | RS1/16SS474J |
| R | 114 | | RS1/16SS333J |
| R | 115 | | RS1/16SS0R0J |
| R | 116 | | RS1/16SS332J |
| R | 117 | | RS1/16SS680J |
| R | 119 | | RS1/16SS0R0J |
| R | 124 | | RS1/16SS0R0J |
| R | 128 | | RS1/16SS0R0J |
| R | 129 | | RS1/16SS0R0J |
| R | 130 | | RS1/16SS221J |
| R | 131 | | RS1/16SS221J |
| R | 132 | | RS1/16SS221J |
| R | 133 | | RS1/16SS221J |
| R | 134 | | RS1/16SS473J |
| R | 135 | | RS1/16SS221J |
| R | 136 | | RS1/16SS221J |
| R | 137 | | RS1/16SS221J |
| R | 138 | | RS1/16SS473J |
| R | 139 | | RS1/16SS221J |
| R | 165 | | RS1/16SS821J |
| R | 166 | | RS1/16SS821J |
| R | 167 | | RS1/16SS821J |
| R | 168 | | RS1/16SS0R0J |
| R | 170 | | RS1/16SS332J |
| R | 171 | | RS1/16SS332J |
| R | 172 | | RS1/16SS332J |
| R | 174 | | RS1/16S4701F |
| R | 192 | | RS1/16S101J |
| R | 193 | | RS1/16SS0R0J |
| R | 201 | | RS1/16SS103J |
| R | 202 | | RS1/16SS330J |
| R | 203 | | RS1/16SS330J |
| R | 204 | | RAB4CQ330J |
| R | 205 | | RAB4CQ330J |
| R | 206 | | RAB4CQ330J |
| R | 210 | | RS1/16SS330J |
| R | 211 | | RS1/16SS0R0J |
| R | 219 | RESISTOR ARRAY | RAB4CQ472J |
| R | 220 | RESISTOR ARRAY | RAB4CQ472J |
| R | 221 | | RS1/16SS473J |
| R | 222 | | RS1/16SS473J |
| R | 223 | | RS1/16SS220J |
| R | 230 | | RS1/16SS0R0J |
| R | 233 | | RS1/16SS0R0J |
| R | 234 | | RS1/16SS0R0J |
| R | 236 | | RS1/16SS220J |
| R | 237 | | RS1/16SS103J |
| R | 238 | | RS1/16SS220J |
| R | 239 | | RS1/16SS103J |
| R | 240 | | RS1/16SS220J |
| R | 241 | | RS1/16SS103J |
| R | 242 | | RS1/16SS220J |
| R | 243 | | RS1/16SS103J |
| R | 244 | | RS1/16SS220J |
| R | 245 | | RS1/16SS103J |
| R | 248 | | RS1/16SS103J |
| R | 252 | | RS1/16SS103J |
| R | 253 | | RS1/16SS103J |
| R | 256 | | RS1/16SS103J |
| R | 271 | | RS1/10S0R0J |
| R | 273 | | RS1/10S0R0J |
| R | 274 | | RS1/10S0R0J |
| R | 281 | | RS1/16SS0R0J |
| R | 301 | | RS1/16SS473J |
| R | 306 | | RS1/16SS222J |
| R | 307 | | RS1/16SS222J |
| R | 310 | | RS1/16SS102J |
| R | 311 | | RS1/16SS102J |
| R | 312 | | RS1/16SS102J |
| R | 313 | | RS1/16SS473J |
| R | 314 | | RS1/16SS102J |
| R | 317 | | RAB4CQ330J |
| R | 318 | | RAB4CQ330J |
| R | 319 | | RAB4CQ330J |
| R | 320 | | RAB4CQ330J |
| R | 501 | | DCN1171 |
| R | 502 | | DCN1172 |
| R | 503 | | RS1/16SS102J |
| R | 504 | | RS1/16SS102J |
| R | 505 | | RS1/16SS123J |
| R | 506 | | RS1/16SS102J |
| R | 507 | | RS1/16SS102J |
| R | 510 | | RS1/10S1R8J |
| R | 511 | | RS1/10S1R8J |
| R | 515 | | RS1/16SS333J |
| R | 516 | | RS1/16SS123J |
| R | 601 | | RS1/16SS103J |
| R | 602 | | RS1/16SS103J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| R | 603 | | RS1/16SS102J |
| R | 604 | | RS1/16SS102J |
| R | 1001 | | RS1/16SS103J |
| R | 1003 | CHIP RESISTOR | RS1/16S6800F |
| R | 1004 | | RS1/16S4700F |
| R | 1005 | | RS1/16SS153J |
| R | 1006 | | RS1/16SS153J |
| R | 1013 | | RS1/16SS103J |
| R | 1016 | | RS1/16SS103J |
| R | 1017 | | RS1/16SS0R0J |
| R | 1018 | | RS1/16SS0R0J |
| R | 1019 | | RS1/16SS0R0J |
| R | 1021 | | RS1/16SS103J |
| R | 1027 | | RS1/16SS103J |
| R | 1028 | | RS1/16SS103J |
| R | 1029 | | RS1/16SS820J |
| R | 1030 | | RS1/16SS101J |
| R | 1031 | | RS1/16SS221J |
| R | 1032 | RESISTOR ARRAY | RAB4CQ103J |
| R | 1033 | RESISTOR ARRAY | RAB4CQ103J |
| R | 1034 | RESISTOR ARRAY | RAB4CQ103J |
| R | 1035 | RESISTOR ARRAY | RAB4CQ103J |
| R | 1036 | | RS1/16S43R0D |
| R | 1037 | CHIP RESISTOR | RS1/16S1000F |
| R | 1039 | | RS1/16S43R0D |
| R | 1040 | CHIP RESISTOR | RS1/16S1000F |
| R | 1066 | | RS1/16SS473J |
| R | 1067 | | RS1/16SS473J |
| R | 1068 | | RS1/16SS473J |
| R | 1069 | | RS1/16SS473J |
| R | 1071 | | RS1/16SS103J |
| R | 1103 | | RS1/16SS0R0J |
| R | 1107 | | RS1/16SS0R0J |
| R | 1110 | | RS1/16SS0R0J |
| R | 1111 | | RS1/16SS104J |
| R | 1132 | | RS1/16SS470J |
| R | 1153 | | RS1/16SS472J |
| R | 1161 | | RS1/16SS472J |
| R | 1163 | | RS1/16SS472J |
| R | 1164 | | RS1/16SS472J |
| R | 1181 | | RS1/16SS103J |
| R | 1182 | | RS1/16SS103J |
| R | 1191 | | RS1/16SS472J |
| R | 1195 | | RS1/16SS472J |
| R | 1199 | | RS1/16SS103J |
| R | 1205 | | RS1/16SS103J |
| R | 1219 | | RS1/16SS0R0J |
| R | 1240 | | RS1/16SS220J |
| R | 1241 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1242 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1243 | | RS1/16SS0R0J |
| R | 1244 | | RS1/16SS330J |
| R | 1245 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1246 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1247 | | RS1/16SS220J |
| R | 1248 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1249 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1250 | | RS1/16SS0R0J |
| R | 1251 | | RS1/16SS330J |
| R | 1252 | | RS1/16SS330J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| R | 1255 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1256 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1257 | | RS1/16SS220J |
| R | 1258 | | RS1/16SS220J |
| R | 1260 | | RS1/16SS220J |
| R | 1261 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1262 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1263 | | RS1/16SS0R0J |
| R | 1264 | | RS1/16SS330J |
| R | 1265 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1266 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1267 | | RS1/16SS220J |
| R | 1268 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1269 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1270 | | RS1/16SS0R0J |
| R | 1271 | | RS1/16SS330J |
| R | 1272 | | RS1/16SS330J |
| R | 1273 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1274 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1275 | | RS1/16SS220J |
| R | 1276 | | RS1/16SS220J |
| R | 1277 | | RS1/16SS0R0J |
| R | 1278 | | RS1/16SS0R0J |
| R | 1279 | | RS1/16SS391J |
| R | 1281 | RESISTOR ARRAY | RAB4CQ470J |
| R | 1282 | RESISTOR ARRAY | RAB4CQ470J |
| R | 1283 | RESISTOR ARRAY | RAB4CQ470J |
| R | 1284 | | RS1/16SS470J |
| R | 1285 | | RS1/16SS470J |
| R | 1286 | | RS1/16SS470J |
| R | 1287 | RESISTOR ARRAY | RAB4CQ470J |
| R | 1288 | | RS1/16SS220J |
| R | 1289 | | RS1/16SS220J |
| R | 1301 | | RS1/16S4700F |
| R | 1302 | | RS1/16S1001F |
| R | 1303 | | RS1/16S1001F |
| R | 1312 | | RS1/16S1001F |
| R | 1313 | | RS1/16S1001F |
| R | 1314 | | RS1/16S0R0J |
| R | 1401 | | RS1/16SS220J |
| R | 1402 | | RS1/16SS220J |
| R | 1403 | | RS1/16SS220J |
| R | 1404 | | RS1/16SS220J |
| R | 1405 | | RS1/16SS220J |
| R | 1406 | | RS1/16SS220J |
| R | 1407 | | RS1/16SS220J |
| R | 1411 | RESISTOR ARRAY | RAB4CQ103J |
| R | 1412 | | RS1/16SS103J |
| R | 1413 | | RS1/16SS473J |
| R | 1414 | | RS1/16SS220J |
| R | 1415 | | RS1/16SS220J |
| R | 1416 | | RS1/16SS220J |
| R | 1421 | | RS1/16SS103J |
| R | 1422 | | RS1/16SS103J |
| R | 1802 | | RS1/16SS221J |
| R | 1803 | | RS1/16SS331J |
| R | 1804 | | RS1/16SS330J |
| R | 1812 | | RS1/16SS221J |
| R | 1813 | | RS1/16SS331J |
| R | 1814 | | RS1/16SS330J |

| Mark | No. | Description | Part No. | Mark | No. | Description | Part No. |
|---|---|---|---|---|---|---|---|
| R | 2301 | | RS1/16SS332J | R | 3228 | | RS1/16SS103J |
| R | 2302 | | RS1/16SS0R0J | R | 3229 | | RS1/16SS103J |
| R | 2304 | | RS1/16SS0R0J | R | 3230 | | RS1/10S0R0J |
| R | 2316 | | RS1/16SS103J | R | 3232 | | RS1/16SS0R0J |
| R | 2501 | | RS1/16SS681J | R | 3233 | | RS1/16SS0R0J |
| R | 2502 | | RS1/16S1500F | R | 3234 | | RS1/16SS0R0J |
| R | 2504 | | RS1/16SS681J | R | 3301 | | RS1/16SS470J |
| R | 2505 | | RS1/16S1500F | R | 3302 | | RS1/16SS0R0J |
| R | 2506 | | RS1/16S0R0J | R | 3305 | | RS1/16SS331J |
| R | 2507 | | RS1/16SS681J | R | 3306 | | RS1/16S4700F |
| R | 2508 | | RS1/16S1500F | R | 3307 | CHIP RESISTOR | RS1/16SS1801F |
| R | 2510 | | RS1/16SS681J | R | 3308 | | RS1/16SS100J |
| R | 2511 | | RS1/16S1500F | R | 3309 | | RS1/16SS681J |
| R | 2513 | | RS1/16SS681J | R | 3310 | | RS1/16SS103J |
| R | 2514 | | RS1/16S1500F | R | 3315 | | RS1/16SS681J |
| R | 3002 | | RS1/16SS0R0J | R | 3320 | | RS1/16SS681J |
| R | 3003 | | RS1/16SS0R0J | R | 3327 | | RS1/16SS681J |
| R | 3004 | | RS1/16SS0R0J | R | 3336 | | RS1/16SS0R0J |
| R | 3005 | RESISTOR ARRAY | RAB4CQ103J | R | 3337 | | RS1/16SS103J |
| R | 3006 | | RS1/16SS0R0J | R | 3341 | | RS1/16SS0R0J |
| R | 3007 | | RS1/16SS0R0J | R | 3342 | | RS1/16SS103J |
| R | 3008 | | RS1/16SS0R0J | R | 3703 | | RS1/16SS101J |
| R | 3009 | | RS1/16SS0R0J | R | 3704 | | RS1/16SS101J |
| R | 3010 | | RS1/16SS0R0J | R | 3705 | | RS1/16SS101J |
| R | 3011 | | RS1/16SS0R0J | R | 3708 | | RS1/16SS103J |
| R | 3012 | | RS1/16SS0R0J | R | 3715 | | RS1/16SS0R0J |
| R | 3101 | | RS1/16SS0R0J | R | 3716 | | RS1/16SS330J |
| R | 3102 | | RS1/16SS0R0J | R | 3720 | | RS1/16SS0R0J |
| R | 3103 | | RS1/16SS0R0J | R | 3738 | | RS1/16SS103J |
| R | 3104 | | RS1/16SS0R0J | R | 3808 | | RS1/16SS101J |
| R | 3105 | | RS1/16SS105J | R | 3810 | | RAB4CQ330J |
| R | 3106 | | RS1/16SS103J | R | 3811 | | RAB4CQ330J |
| R | 3107 | | RS1/16SS470J | R | 3812 | | RAB4CQ330J |
| R | 3108 | | RS1/16SS470J | R | 3813 | | RAB4CQ330J |
| R | 3109 | | RS1/16SS470J | R | 3814 | | RS1/16SS220J |
| R | 3111 | | RS1/16SS0R0J | R | 3816 | | RS1/16SS820J |
| R | 3113 | | RS1/16SS103J | R | 3817 | | RS1/16SS820J |
| R | 3201 | | RS1/16SS470J | R | 3818 | | RS1/16SS220J |
| R | 3202 | | RS1/16SS470J | R | 3820 | | RS1/16SS820J |
| R | 3203 | | RS1/16SS470J | R | 3821 | | RS1/16SS220J |
| R | 3204 | | RS1/16SS0R0J | R | 3823 | | RS1/16SS820J |
| R | 3206 | | RS1/16SS470J | R | 3824 | RESISTOR ARRAY | RAB4CQ820J |
| R | 3207 | | RS1/16SS470J | R | 3828 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3208 | | RS1/16SS470J | R | 3829 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3209 | | RS1/16SS104J | R | 3830 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3210 | | RN1/16SE1201D | R | 3831 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3211 | | RN1/16SE1002D | R | 3832 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3213 | | RS1/16SS681J | R | 3833 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3214 | | RS1/16SS682J | R | 3835 | | RS1/16SS330J |
| R | 3215 | | RS1/16SS223J | R | 3837 | | RAB4CQ330J |
| R | 3216 | | RN1/16SE1201D | R | 3838 | | RAB4CQ330J |
| R | 3217 | | RN1/16SE1002D | R | 3839 | | RAB4CQ330J |
| R | 3218 | | RN1/16SE2202D | R | 3840 | | RAB4CQ330J |
| R | 3219 | | RS1/16SS682J | R | 3841 | | RS1/16SS820J |
| R | 3220 | | RS1/16SS101J | R | 3842 | | RS1/16SS562J |
| R | 3221 | | RS1/16SS101J | R | 3843 | | RS1/16SS220J |
| R | 3222 | | RS1/16SS682J | R | 3844 | | RS1/16SS220J |
| R | 3223 | | RN1/16SE2202D | R | 3845 | | RS1/16SS820J |
| R | 3224 | | RS1/16SS101J | R | 3846 | | RS1/16SS102J |
| R | 3227 | | RS1/16SS101J | R | 3847 | | RS1/16SS220J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| R | 3848 | | RS1/16SS820J |
| R | 3849 | | RS1/16SS103J |
| R | 3850 | | RS1/16SS330J |
| R | 3851 | | RAB4CQ330J |
| R | 3857 | | RS1/16SS0R0J |
| R | 3862 | | RS1/16SS0R0J |
| R | 3871 | | RS1/16SS223J |
| R | 4501 | | RS1/10S0R0J |
| R | 4504 | | RS1/10S272J |
| R | 4505 | | RS1/10S272J |
| R | 4507 | | RS1/10S272J |
| R | 4511 | | RS1/16SS0R0J |
| R | 4521 | | RS1/16SS682J |
| R | 4526 | | RS1/16SS153J |
| R | 4531 | | RS1/16SS0R0J |
| R | 4541 | | RS1/16SS0R0J |
| R | 4551 | | RS1/10S0R0J |
| R | 4552 | | RS1/10S0R0J |
| R | 4553 | | RS1/10S0R0J |
| R | 4554 | | RS1/10S0R0J |
| R | 4556 | | RS1/10S0R0J |
| R | 4558 | | RS1/16SS223J |
| R | 4559 | | RS1/16SS0R0J |
| R | 4573 | | RS1/16SS0R0J |
| R | 4574 | | RS1/16S0R0J |
| R | 4575 | | RS1/16S0R0J |
| R | 4581 | | RS1/16SS101J |
| R | 4701 | RESISTOR ARRAY | RAB4CQ101J |
| R | 4702 | RESISTOR ARRAY | RAB4CQ101J |
| R | 4703 | | RS1/16SS101J |
| R | 4704 | | RS1/16SS0R0J |
| R | 4705 | | RS1/16SS0R0J |
| R | 4706 | | RS1/16SS0R0J |
| R | 4707 | | RS1/16SS103J |
| R | 4708 | RESISTOR ARRAY | RAB4CQ103J |
| R | 4709 | RESISTOR ARRAY | RAB4CQ103J |
| R | 4710 | | RS1/16SS103J |
| R | 4711 | | RS1/16SS103J |
| R | 4712 | | RS1/16SS103J |
| R | 4713 | | RS1/16SS103J |
| R | 4721 | RESISTOR ARRAY | RAB4CQ101J |
| R | 4722 | RESISTOR ARRAY | RAB4CQ101J |
| R | 4723 | | RS1/16SS470J |
| R | 4724 | | RS1/16SS220J |
| R | 4725 | | RS1/16SS220J |
| R | 4726 | | RS1/16SS220J |
| R | 4727 | | RS1/16SS103J |
| R | 4728 | | RS1/16SS103J |
| R | 4729 | | RS1/16SS0R0J |
| R | 4731 | | RS1/16SS472J |
| R | 4732 | | RS1/16SS472J |
| R | 5101 | RESISTOR ARRAY | RAB4CQ104J |
| R | 5102 | RESISTOR ARRAY | RAB4CQ104J |
| R | 5103 | | RS1/16SS104J |
| R | 5104 | | RS1/16SS104J |
| R | 5105 | RESISTOR ARRAY | RAB4CQ680J |
| R | 5106 | RESISTOR ARRAY | RAB4CQ680J |
| R | 5107 | | RS1/16SS680J |
| R | 5108 | | RS1/16SS680J |
| R | 5109 | | RS1/16SS470J |
| R | 5110 | | RS1/16SS103J |
| R | 5111 | | RS1/16SS102J |
| R | 5113 | | RS1/16SS103J |
| R | 5114 | | RS1/16SS103J |
| R | 5115 | | RS1/16SS103J |
| R | 5116 | | RS1/16SS103J |
| R | 5117 | | RS1/16SS104J |
| R | 5118 | | RN1/16SE9101D |
| R | 5119 | CHIP RESISTOR | RS1/16S56R0D |
| R | 5120 | CHIP RESISTOR | RS1/16S56R0D |
| R | 5121 | CHIP RESISTOR | RS1/16S56R0D |
| R | 5122 | CHIP RESISTOR | RS1/16S56R0D |
| R | 5123 | | RS1/16SS103J |
| R | 5124 | | RS1/16SS103J |
| R | 5125 | | RS1/16SS102J |
| R | 5127 | | RS1/16SS103J |
| R | 5129 | | RS1/16SS820J |
| R | 5130 | | RS1/16SS0R0J |
| R | 5131 | | RN1/16SE5101D |
| R | 5132 | | RS1/16SS0R0J |
| R | 5133 | | RS1/16SS0R0J |
| R | 5134 | | RS1/16SS0R0J |
| R | 5135 | | RS1/16SS0R0J |
| R | 5140 | | RS1/16SS103J |
| R | 5141 | | RS1/16SS0R0J |
| R | 5201 | | RS1/16SS0R0J |
| R | 5202 | | RS1/16SS0R0J |
| R | 5203 | | RS1/16S3301F |
| R | 5204 | | RS1/16S8200F |
| R | 5205 | | RS1/16SS680J |
| R | 5207 | | RS1/16SS0R0J |
| R | 5212 | | RS1/16SS0R0J |
| R | 5213 | | RS1/16SS0R0J |
| R | 5214 | | RS1/16SS473J |
| R | 5215 | | RS1/16SS473J |
| R | 5216 | | RS1/16SS0R0J |
| R | 5217 | | RS1/16SS0R0J |
| R | 5220 | | RS1/16S1501F |
| R | 5221 | | RS1/16SS473J |
| R | 5222 | | RS1/16SS100J |
| R | 5445 | | RS1/10S0R0J |
| R | 5606 | | RS1/16SS820J |
| R | 5607 | | RS1/16SS820J |
| R | 5608 | | RS1/16SS103J |
| R | 5609 | | RS1/16SS103J |
| R | 5610 | | RS1/16SS102J |
| R | 5612 | | RS1/16SS103J |
| R | 5613 | | RS1/16SS102J |
| R | 5614 | | RS1/16SS102J |
| R | 5615 | | RS1/16SS102J |
| R | 5616 | | RS1/16SS103J |
| R | 5618 | | RS1/16SS103J |
| R | 5619 | | RS1/16SS102J |
| R | 5622 | | RS1/16SS820J |
| R | 5623 | | RS1/16SS820J |
| R | 5624 | | RS1/16SS820J |
| R | 5626 | | RS1/16SS220J |
| R | 5627 | | RS1/16SS820J |
| R | 5628 | | RS1/16SS220J |
| R | 5629 | | RS1/16SS820J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | R 5630 | | RS1/16SS820J |
| | R 5631 | | RS1/16SS220J |
| A | R 5632 | | RAB4CQ330J |
| | R 5638 | | RAB4CQ330J |
| | R 5642 | | RAB4CQ330J |
| | R 5646 | | RAB4CQ330J |
| | R 5650 | | RS1/16SS820J |
| | R 5651 | | RS1/16S1202F |
| | R 5652 | | RS1/16SS101J |
| | R 5657 | | RS1/16SS102J |
| | R 5658 | | RS1/16SS102J |
| | R 5659 | | RS1/16SS102J |
| | R 5661 | | RS1/16SS102J |
| B | R 5664 | | RS1/16S0R0J |
| | R 5672 | | RS1/16S0R0J |
| | R 5688 | | RS1/16SS105J |
| | R 5689 | | RS1/16SS152J |
| | R 5690 | | RS1/16SS0R0J |
| | R 5692 | | RS1/16SS0R0J |
| | R 5693 | | RS1/16SS0R0J |
| | R 5702 | | RS1/16SS471J |
| | R 5703 | | RS1/16SS681J |
| | R 5704 | | RS1/16SS151J |
| | R 5705 | | RS1/16S0R0J |
| C | R 5706 | CHIP RESISTOR | RS1/16S75R0F |
| | R 5707 | | RS1/16SS104J |
| | R 5708 | | RS1/16SS391J |
| | R 5804 | | RS1/16SS473J |
| | R 5805 | | RS1/16SS472J |
| | R 5806 | | RS1/16SS102J |
| | R 5807 | | RS1/16SS562J |
| | R 5808 | | RS1/16SS472J |
| | R 5809 | | RS1/16SS272J |
| | R 5812 | | RS1/16SS472J |
| | R 5813 | | RS1/16SS272J |
| D | | | |
| | R 5814 | | RS1/16SS472J |
| | R 5815 | | RS1/16SS272J |
| | R 5817 | | RS1/16SS472J |
| | R 5818 | | RS1/16SS472J |
| | R 5821 | | RS1/16SS472J |
| | R 5822 | | RS1/16SS472J |
| | R 5825 | RESISTOR ARRAY | RAB4CQ220J |
| | R 5826 | RESISTOR ARRAY | RAB4CQ220J |
| | R 5827 | RESISTOR ARRAY | RAB4CQ220J |
| | R 5828 | RESISTOR ARRAY | RAB4CQ220J |
| E | | | |
| | R 5829 | | RS1/16SS560J |
| | R 5831 | | RS1/16SS0R0J |
| | R 5833 | | RS1/16SS220J |
| | R 5834 | | RS1/16SS220J |
| | R 5836 | | RS1/16SS103J |
| | R 5837 | | RS1/16SS0R0J |
| | R 5838 | | RS1/16SS330J |
| | R 5839 | | RS1/16SS471J |
| | R 5842 | | RS1/16SS331J |
| | R 5843 | | RS1/16SS331J |
| | R 5844 | | RS1/16SS331J |
| F | R 5845 | | RS1/16SS331J |
| | R 5846 | | RS1/16SS472J |
| | R 5848 | | RS1/16SS472J |
| | R 5852 | | RS1/16SS103J |
| | R 5853 | | RS1/16SS103J |
| | R 5854 | | RS1/16SS103J |
| | R 5855 | RESISTOR ARRAY | RAB4CQ100J |
| | R 5856 | | RS1/16SS103J |
| | R 5857 | | RS1/16SS103J |
| | R 5859 | | RS1/16SS103J |
| | R 5861 | | RS1/16SS103J |
| | R 5862 | | RS1/16SS472J |
| | R 5863 | | RS1/16SS681J |
| | R 5864 | | RS1/16SS102J |
| | R 5865 | | RS1/16SS0R0J |
| | R 5867 | | RS1/16SS561J |
| | R 5868 | | RS1/16SS222J |
| | R 5869 | | RS1/16SS472J |
| | R 5870 | | RS1/16SS273J |
| | R 6001 | | RS1/16SS0R0J |

## CAPACITORS

| | | | |
|---|---|---|---|
| | C 100 | | CKSSYB102K50 |
| | C 101 | | CKSSYB102K50 |
| | C 103 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| | C 104 | CAPACITOR(CERAMIC) | VCG1057 |
| | C 105 | | CKSSYB102K50 |
| | C 106 | | CKSSYF104Z16 |
| | C 107 | | CKSSYB681K50 |
| | C 113 | | CKSSYB472K25 |
| | C 114 | | CKSSYB472K25 |
| | C 115 | | CKSSYB103K16 |
| | C 116 | | CKSSYB104K10 |
| | C 117 | | CKSSYB102K50 |
| | C 120 | | CKSSYB104K10 |
| | C 121 | | CKSSYB222K50 |
| | C 122 | | CKSSYB222K50 |
| | C 124 | | CKSSYB104K10 |
| | C 125 | CAPACITOR(CERAMIC) | VCG1058 |
| | C 127 | | CKSSYB473K10 |
| | C 128 | | CKSSYB104K10 |
| | C 129 | CAPACITOR(CERAMIC) | VCG1058 |
| | C 130 | | CKSQYB475K6R3 |
| | C 131 | | CKSSYB683K10 |
| | C 133 | | CKSSYB104K10 |
| | C 134 | | CKSSYB104K10 |
| | C 135 | | CKSSYB103K16 |
| | C 136 | | CKSSYB104K10 |
| | C 137 | | CKSSYB682K25 |
| | C 140 | ELECT. CAPACITOR | DCH1199 |
| | C 141 | ELECT. CAPACITOR | DCH1199 |
| | C 142 | | DCH1201 |
| | C 143 | | DCH1201 |
| | C 144 | | CKSSYB103K16 |
| | C 145 | | CKSSYB103K16 |
| | C 146 | | DCH1201 |
| | C 147 | ELECT. CAPACITOR | DCH1198 |
| | C 148 | ELECT. CAPACITOR | DCH1198 |
| | C 149 | | CKSSYB103K16 |
| | C 152 | | CKSSYB102K50 |
| | C 153 | | CEVW100M16 |
| | C 154 | CAPACITOR(CERAMIC) | VCG1057 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 155 | ELECT. CAPACITOR | DCH1199 |
| C | 156 | | CKSSYB182K50 |
| C | 157 | | CKSSYB103K16 |
| C | 158 | | CKSSYB103K16 |
| C | 159 | | CKSSYF104Z16 |
| C | 162 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 163 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 164 | | CKSSYB102K50 |
| C | 165 | | CCSSCH220J50 |
| C | 166 | | CCSSCH220J50 |
| C | 167 | | CKSSYF104Z16 |
| C | 169 | | CKSSYB104K10 |
| C | 170 | | CCSSCH470J50 |
| C | 171 | | CKSSYB104K10 |
| C | 172 | | CCSSCH470J50 |
| C | 173 | | CCSSCH470J50 |
| C | 174 | | CCSSCH470J50 |
| C | 176 | | CCSSCH220J50 |
| C | 177 | | CCSSCH220J50 |
| C | 180 | | DCH1201 |
| C | 181 | | CKSQYB475K6R3 |
| C | 182 | | DCH1201 |
| C | 187 | | CKSSYB103K16 |
| C | 188 | | CKSSYB103K16 |
| C | 189 | | CKSSYB102K50 |
| C | 194 | | CKSQYB475K6R3 |
| C | 197 | | CKSSYB104K10 |
| C | 199 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 201 | | CKSSYB104K10 |
| C | 202 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 280 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 281 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 282 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 283 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 284 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 285 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 286 | | DCH1201 |
| C | 287 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 288 | | CKSSYF104Z16 |
| C | 289 | | CKSSYB102K50 |
| C | 290 | | CKSSYF104Z16 |
| C | 291 | | CKSSYB102K50 |
| C | 501 | | CKSSYF104Z16 |
| C | 502 | CHIP CERAMIC C. | DCH1263 |
| C | 503 | | CKSRYB471K50 |
| C | 504 | | CKSSYB104K10 |
| C | 505 | | CKSRYB104K25 |
| C | 508 | | CKSSYB102K50 |
| C | 509 | | CCSSCH330J50 |
| C | 510 | | CCSSCH680J50 |
| C | 511 | | CKSQYB105K16 |
| C | 512 | | CKSRYF104Z16 |
| C | 513 | | CKSRYF104Z16 |
| C | 514 | | CKSRYB104K25 |
| C | 515 | | CKSRYB104K25 |
| C | 516 | | CKSSYB104K10 |
| C | 532 | | CKSSYB104K10 |
| C | 803 | | CKSRYF104Z16 |
| C | 824 | | CKSQYF104Z25 |
| C | 832 | | CKSRYF104Z16 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 1001 | | CKSSYB104K10 |
| C | 1002 | | CKSSYB104K10 |
| C | 1003 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1004 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1005 | | CKSSYB102K50 |
| C | 1006 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1007 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 1008 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1009 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 1010 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1011 | | CKSSYB102K50 |
| C | 1012 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1013 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1014 | | CKSSYB102K50 |
| C | 1015 | | CKSSYB104K10 |
| C | 1016 | | CKSSYB104K10 |
| C | 1017 | | CKSSYB104K10 |
| C | 1018 | | CKSSYB104K10 |
| C | 1019 | | CKSSYB104K10 |
| C | 1020 | | CEVW100M16 |
| C | 1021 | | DCH1201 |
| C | 1022 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1023 | | CKSSYB102K50 |
| C | 1024 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1025 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1026 | | CKSSYB102K50 |
| C | 1027 | | CKSSYB104K10 |
| C | 1028 | | CKSSYB104K10 |
| C | 1029 | | CKSSYB104K10 |
| C | 1030 | | CKSSYB104K10 |
| C | 1031 | | CKSSYB104K10 |
| C | 1032 | | CKSSYB104K10 |
| C | 1033 | | CKSSYB104K10 |
| C | 1034 | | CKSSYB104K10 |
| C | 1035 | | CKSSYB104K10 |
| C | 1036 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1037 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1038 | | CKSSYB102K50 |
| C | 1039 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1040 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1041 | | CKSSYB102K50 |
| C | 1042 | | CCSSCJ3R0C50 |
| C | 1043 | | CCSSCJ3R0C50 |
| C | 1044 | | CCSSCH5R0C50 |
| C | 1045 | | CCSSCH5R0C50 |
| C | 1047 | | CKSSYB104K10 |
| C | 1048 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1049 | | CKSSYB102K50 |
| C | 1050 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1051 | | DCH1201 |
| C | 1052 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1053 | | CKSSYB102K50 |
| C | 1056 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1057 | | CKSSYF104Z16 |
| C | 1058 | | CKSSYB103K16 |
| C | 1059 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1060 | | CKSSYF104Z16 |
| C | 1061 | | CKSSYB102K50 |
| C | 1062 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1063 | | CKSSYF104Z16 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 1064 | | CKSSYB102K50 |
| C | 1065 | | CKSSYB102K50 |
| C | 1066 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1067 | | CKSSYF104Z16 |
| C | 1068 | | CKSSYB102K50 |
| C | 1101 | | CKSSYB102K50 |
| C | 1104 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1105 | | CKSSYF104Z16 |
| C | 1113 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1202 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1203 | | CKSSYF104Z16 |
| C | 1204 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1205 | | CKSSYB103K16 |
| C | 1206 | | CKSSYB103K16 |
| C | 1207 | | CKSSYB102K50 |
| C | 1208 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1209 | | CKSSYB102K50 |
| C | 1210 | | CKSSYB102K50 |
| C | 1211 | | CKSSYF104Z16 |
| C | 1212 | | CKSSYF104Z16 |
| C | 1213 | | CKSSYF104Z16 |
| C | 1214 | | CKSSYF104Z16 |
| C | 1215 | CHIP PVO CAPACITOR | VCH1268 |
| C | 1216 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1217 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1218 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1219 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1220 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1221 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1222 | | CKSSYF104Z16 |
| C | 1223 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1224 | | CKSSYB103K16 |
| C | 1225 | | CKSSYB103K16 |
| C | 1226 | | CKSSYB102K50 |
| C | 1227 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1228 | | CKSSYB102K50 |
| C | 1229 | | CKSSYB102K50 |
| C | 1230 | | CKSSYF104Z16 |
| C | 1231 | | DCH1201 |
| C | 1235 | | DCH1201 |
| C | 1236 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1291 | | CKSSYF104Z16 |
| C | 1301 | | CKSQYB225K10 |
| C | 1302 | | CKSSYF104Z16 |
| C | 1303 | | CKSSYF104Z16 |
| C | 1304 | | CEVW470M6R3 |
| C | 1312 | | CKSSYF104Z16 |
| C | 1313 | | CKSSYF104Z16 |
| C | 1315 | | CKSQYB225K10 |
| C | 1316 | | DCH1201 |
| C | 1401 | | CKSSYB103K16 |
| C | 1421 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1801 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1802 | | CKSQYB225K10 |
| C | 1803 | | CCSSCH221J50 |
| C | 1804 | | CKSSYB331K50 |
| C | 1805 | | CKSSYB473K10 |
| C | 1811 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1812 | | CKSQYB225K10 |
| C | 1813 | | CCSSCH101J50 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 1814 | | CCSSCH151J50 |
| C | 1815 | | CKSSYB473K10 |
| C | 2305 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 2501 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 2502 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 2503 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 2504 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 2505 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 2506 | | DCH1201 |
| C | 3103 | | CEVW101M16 |
| C | 3104 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3105 | | CKSSYF104Z16 |
| C | 3106 | | CKSSYB102K50 |
| C | 3107 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3108 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 3201 | ELECT. CAPACITOR | CEAT102M6R3 |
| C | 3202 | | CKSSYF104Z16 |
| C | 3203 | | CKSSYB102K50 |
| C | 3204 | | CKSSYB331K50 |
| C | 3206 | | CKSSYF104Z16 |
| C | 3207 | | CEVW470M6R3 |
| C | 3211 | | CEVW101M16 |
| C | 3212 | | CKSSYF104Z16 |
| C | 3213 | | CKSSYB561K50 |
| C | 3214 | | CKSSYB561K50 |
| C | 3215 | | CCSSCH820J50 |
| C | 3216 | | CCSSCH820J50 |
| C | 3217 | | CKSSYF104Z16 |
| C | 3218 | | CEVW101M16 |
| C | 3219 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 3220 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3301 | | CCSRCH7R0D50 |
| C | 3302 | | CCSRCH7R0D50 |
| C | 3303 | | CCSSCH150J50 |
| C | 3304 | | CCSSCH820J50 |
| C | 3305 | | CCSSCH220J50 |
| C | 3307 | | DCH1201 |
| C | 3313 | | CKSQYB103K50 |
| C | 3319 | | CKSQYB103K50 |
| C | 3325 | | CKSQYB103K50 |
| C | 3332 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3342 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3701 | | CKSSYB103K16 |
| C | 3703 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3704 | | DCH1201 |
| C | 3705 | | CKSSYB102K50 |
| C | 3706 | | CKSSYB102K50 |
| C | 3707 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3738 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3801 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3802 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3803 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3804 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4501 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4502 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4503 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4504 | | CKSSYF104Z16 |
| C | 4505 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4506 | | CKSSYF104Z16 |
| C | 4507 | | CEVW101M16 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 4508 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 4509 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 4511 | | CKSQYB475K6R3 |
| C | 4513 | | CKSQYB475K6R3 |
| C | 4515 | | CEVW470M6R3 |
| C | 4516 | | CEVW100M16 |
| C | 4522 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4524 | | CKSQYB475K6R3 |
| C | 4525 | | CKSQYB475K6R3 |
| C | 4531 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4532 | | CKSSYB103K16 |
| C | 4533 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4534 | | DCH1201 |
| C | 4535 | | CKSSYB102K50 |
| C | 4536 | | CKSSYB102K50 |
| C | 4537 | | CKSSYB102K50 |
| C | 4539 | | CKSSYB102K50 |
| C | 4540 | | CKSSYB102K50 |
| C | 4541 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4542 | | CKSQYB225K10 |
| C | 4543 | | CKSSYB102K50 |
| C | 4555 | | CKSQYB475K6R3 |
| C | 4556 | | CKSQYB475K6R3 |
| C | 4557 | | CKSSYB103K16 |
| C | 4558 | | CEVW101M16 |
| C | 4559 | | CEVW101M16 |
| C | 4562 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4563 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4567 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4570 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4571 | | CKSQYB475K6R3 |
| C | 4572 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 4573 | | CKSQYB475K6R3 |
| C | 4581 | | CEVW101M16 |
| C | 4585 | | CKSSYF104Z16 |
| C | 4586 | | CEVW101M16 |
| C | 4701 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4702 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4703 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4704 | | CKSSYB102K50 |
| C | 4705 | | CKSSYB102K50 |
| C | 4706 | | CKSSYB102K50 |
| C | 5104 | | CKSSYF104Z16 |
| C | 5105 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5106 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5107 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5108 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5109 | | CKSSYF104Z16 |
| C | 5110 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5111 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5112 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5113 | | CKSSYF104Z16 |
| C | 5114 | | CKSSYF104Z16 |
| C | 5115 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5116 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5117 | | CCSSCH120J50 |
| C | 5118 | | CCSSCH120J50 |
| C | 5119 | | CKSSYB271K50 |
| C | 5120 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5121 | CHIP ELECT.CAPACITOR | CEVW101M4 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 5122 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 5123 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5132 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5133 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5205 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5209 | | CKSSYF104Z16 |
| C | 5210 | | CEVW101M16 |
| C | 5211 | | CKSSYB102K50 |
| C | 5212 | | CKSQYB225K10 |
| C | 5213 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5216 | | CKSSYB102K50 |
| C | 5217 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5218 | | CKSSYB102K50 |
| C | 5219 | | CKSSYB102K50 |
| C | 5222 | | CKSSYF104Z16 |
| C | 5223 | | CKSSYB102K50 |
| C | 5601 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5602 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5603 | | CKSSYF104Z16 |
| C | 5604 | | CKSSYB103K16 |
| C | 5605 | | CKSSYB103K16 |
| C | 5606 | | CKSSYB103K16 |
| C | 5607 | | CKSSYB103K16 |
| C | 5608 | | CKSSYB103K16 |
| C | 5609 | | CKSSYB103K16 |
| C | 5610 | | CKSSYB103K16 |
| C | 5611 | | CKSSYB103K16 |
| C | 5612 | | CKSSYF104Z16 |
| C | 5613 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 5614 | | CKSSYB103K16 |
| C | 5615 | | CKSSYF104Z16 |
| C | 5616 | | CKSSYF104Z16 |
| C | 5617 | | CKSSYB103K16 |
| C | 5622 | | CKSSYB103K16 |
| C | 5623 | | CKSSYB103K16 |
| C | 5624 | | CKSSYB103K16 |
| C | 5625 | | CKSSYB103K16 |
| C | 5626 | | CKSSYB103K16 |
| C | 5627 | | CKSSYB103K16 |
| C | 5628 | | CKSSYB103K16 |
| C | 5629 | | CKSSYB103K16 |
| C | 5630 | | CKSSYB103K16 |
| C | 5631 | | CKSSYB103K16 |
| C | 5632 | | CKSSYB103K16 |
| C | 5640 | | CCSSCH120J50 |
| C | 5641 | | CCSSCH120J50 |
| C | 5702 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5704 | | CEVW1R0M50 |
| C | 5706 | | CKSSYB102K50 |
| C | 5801 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5802 | | CKSSYB102K50 |
| C | 5803 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5804 | | CKSSYB102K50 |
| C | 5805 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5806 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5807 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5808 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5809 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 5812 | | CKSSYF104Z16 |
| C | 5813 | | CKSSYF104Z16 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | C 5814 | | CKSRYF104Z16 |
| | C 5815 | | CKSRYB104K25 |
| | C 5816 | | CKSRYB104K25 |
| | C 5817 | | CKSRYB104K25 |
| | C 5818 | | CKSRYB104K25 |
| | C 5819 | | CKSSYB102K50 |
| | C 5820 | CAPACITOR(CERAMIC) | VCG1057 |
| | C 5821 | | CKSSYB102K50 |
| | C 5822 | | CKSSYB102K50 |

## D MAIN ASSY(DVR-450H-S)

### MISCELLANEOUS

| | | | |
|---|---|---|---|
| | IC | 200 FLASH ROM IC | SST25V016BCS |
| | IC | 201 SDRAM(64M) | K4S641632K-UC60 |
| | IC | 501 7CH DRIVER IC | BD7956FS |
| | IC | 1001 DVDR IC | MC-10050F1-107LU1A |
| | IC | 1102 FLASH ROM | VYW2404 |
| | IC | 1201 DDR-SDRAM(512MBIT) | EDD5116AFTA-6B |
| | IC | 1221 DDR-SDRAM(512MBIT) | EDD5116AFTA-6B |
| | IC | 1301 IC | NJM12904V |
| | IC | 1302 IC | NJM12904V |
| | IC | 3101 AD CONVERTER IC | AK5359ET |
| | IC | 3201 IC | PCM1742KE |
| | IC | 3202 OP-AMP IC | UPC4570G2 |
| | IC | 3701 IC | TC7WH34FU |
| | IC | 3702 IC | TC7SH08FUS1 |
| | IC | 3707 RESET IC | PST3813U |
| | IC | 4501 FUSE | CEK1285 |
| | IC | 4502 FUSE | CEK1285 |
| ⚠ | IC | 4511 REGULATOR IC | S-1170B33UC-OTS |
| ⚠ | IC | 4521 REGULATOR IC | S-1170B25UC-OTK |
| ⚠ | IC | 4531 REGULATOR IC | MM1701WH |
| ⚠ | IC | 4541 REGULATOR IC (3.3V) | MM1563DF |
| ⚠ | IC | 4552 REGULATOR IC | S-1170B50UC-OUJ |
| ⚠ | IC | 4561 REGULATOR IC | S-1112B50MC-L7J |
| ⚠ | IC | 4562 REGULATOR IC | S-1112B33MC-L6S |
| ⚠ | IC | 4571 REGULATOR IC | S-1132B18-U5 |
| | IC | 4701 LOGIC IC | TC74VCX245FK |
| | IC | 4702 IC | TC7SZ08FU |
| | IC | 4703 LOGIC IC | TC74VHC125FK |
| | IC | 5103 DV-PHY IC | UPD72852AGB-8EU |
| | IC | 5602 SATA BRIDGE IC | 88SA8040B1-TBC1 |
| | IC | 5801 HDMI TRANSMITER | SII9002CSU |
| | IC | 5802 IC | TC7MB3257FK |
| | Q | 102 TRANSISTOR | RT1N141U |
| | Q | 1801 TRANSISTOR | 2SA1576A |
| | Q | 1811 TRANSISTOR | 2SA1576A |
| | Q | 2501 TRANSISTOR | 2SA1576A |
| | Q | 2502 TRANSISTOR | 2SA1576A |
| | Q | 2503 TRANSISTOR | 2SA1576A |
| | Q | 2504 TRANSISTOR | 2SA1576A |
| | Q | 2505 TRANSISTOR | 2SA1576A |
| | Q | 3301 TRANSISTOR | 2SA1576A |
| | Q | 3302 TRANSISTOR | 2SC4081 |
| | Q | 4581 TRANSISTOR | 2SC4081 |
| | Q | 5701 TRANSISTOR | 2SC4081 |
| | Q | 5801 CHIP TRANSISTOR | HN1C01FU |
| | Q | 5802 CHIP TR (PNP X 2) | UMB1N |
| | Q | 5804 DIGITAL TRANSISTOR | DTC124EUA |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| | Q | 5805 TRANSISTOR | 2SA1576A |
| | Q | 5808 MOS FET | 2SK2034 |
| | Q | 5809 TRANSISTOR | UMD2N |
| | Q | 5810 CHIP TRANSISTOR | UMF21N |
| | D | 101 LED | SML-310YT |
| | D | 3201 DIODE | DAN202U |
| | D | 3711 CHIP DIODE | RB501V-40 |
| | D | 3712 CHIP DIODE | RB501V-40 |
| | D | 4521 CHIP DIODE | RB501V-40 |
| | D | 4552 CHIP DIODE | RB501V-40 |
| | D | 4571 CHIP DIODE | RB501V-40 |
| | L | 105 CHIP COIL | BTH1103 |
| | L | 1001 EMI FILTER | DTL1106 |
| | L | 1002 EMI FILTER | DTL1106 |
| | L | 1003 EMI FILTER | DTL1106 |
| | L | 1004 EMI FILTER | DTL1106 |
| | L | 1005 INDUCTOR | LCTC150K2125 |
| | L | 1021 EMI FILTER | DTL1106 |
| | L | 1022 EMI FILTER | DTL1106 |
| | L | 1023 EMI FILTER | DTL1106 |
| | L | 1024 EMI FILTER | DTL1106 |
| | L | 1025 EMI FILTER | DTL1106 |
| | L | 1801 CHIP COIL | LCYA390J2520 |
| | L | 1811 INDUCTOR | LCYA150J2520 |
| | L | 1821 EMI FILTER | DTL1106 |
| | L | 1831 EMI FILTER | DTL1106 |
| | L | 3301 CHIP COIL | LCYA180J2520 |
| | L | 3302 INDUCTOR | LCYA100J2520 |
| | L | 5101 INDUCTOR | CTF1305 |
| | L | 5122 EMI FILTER | DTL1106 |
| | L | 5601 EMI FILTER | DTL1106 |
| | L | 5701 INDUCTOR | CTF1382 |
| | L | 5801 COIL COIL | ATH7022 |
| | L | 5802 COIL | ATH7022 |
| | L | 5803 COIL | ATH7022 |
| | L | 5804 COIL | ATH7022 |
| | L | 5805 EMI FILTER | DTL1106 |
| | JA | 5701 1P PIN JACK | VKB1159 |
| | JA | 5801 HDMI CONNECTOR | AKP1278 |
| | X | 101 CERAMIC RESONATOR | DSS1157 |
| | X | 1001 CRYSTAL RESONATOR | VSS1220 |
| | X | 1002 CRYSTAL RESONATOR | VSS1172 |
| | X | 5101 CRYSTAL | VSS1211 |
| | X | 5502 CRYSTAL | VSS1214 |
| | CN | 101 50P CONNECTOR | DKN1404 |
| | CN | 103 14P CONNECTOR | VKN2030 |
| | CN | 201 10P CONNECTOR | VKN2029 |
| | CN | 501 FFC CONNECTOR | DKN1312 |
| | CN | 502 4P FFC CONNECTOR | DKN1288 |
| | CN | 601 5P FFC CONNECTOR | DKN1402 |
| | CN | 1401 14P CONNECTOR | VKN2030 |
| | CN | 1402 7P FFC CONNECTOR | RKN1048 |
| | CN | 2301 40P CONNECTOR | VKN2065 |
| | CN | 3801 18P CONNECTOR | VKN1811 |
| | CN | 4501 KR CONNECTOR | S13B-PH |
| | CN | 4701 CONNECTOR | VKN2047 |
| | CN | 5101 CONNECTOR | VKN1932 |
| | CN | 5604 SATA PLUG HEADER | VKN2063 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **RESISTORS** | | | |
| R | 104 | | RS1/16SS123J |
| R | 105 | | RS1/16SS0R0J |
| R | 107 | | RS1/16SS473J |
| R | 108 | | RS1/16SS682J |
| R | 109 | | RS1/16SS622J |
| R | 110 | | RS1/16SS102J |
| R | 111 | | RS1/16SS474J |
| R | 112 | | RS1/16SS474J |
| R | 114 | | RS1/16SS333J |
| R | 115 | | RS1/16SS0R0J |
| R | 116 | | RS1/16SS332J |
| R | 117 | | RS1/16SS680J |
| R | 119 | | RS1/16SS0R0J |
| R | 124 | | RS1/16SS0R0J |
| R | 128 | | RS1/16SS0R0J |
| R | 129 | | RS1/16SS0R0J |
| R | 130 | | RS1/16SS221J |
| R | 131 | | RS1/16SS221J |
| R | 132 | | RS1/16SS221J |
| R | 133 | | RS1/16SS221J |
| R | 134 | | RS1/16SS473J |
| R | 135 | | RS1/16SS221J |
| R | 136 | | RS1/16SS221J |
| R | 137 | | RS1/16SS221J |
| R | 138 | | RS1/16SS473J |
| R | 139 | | RS1/16SS221J |
| R | 165 | | RS1/16SS821J |
| R | 166 | | RS1/16SS821J |
| R | 167 | | RS1/16SS821J |
| R | 168 | | RS1/16SS0R0J |
| R | 170 | | RS1/16SS332J |
| R | 171 | | RS1/16SS332J |
| R | 172 | | RS1/16SS332J |
| R | 174 | | RS1/16S4701F |
| R | 192 | | RS1/16S101J |
| R | 193 | | RS1/16SS0R0J |
| R | 201 | | RS1/16SS103J |
| R | 202 | | RS1/16SS330J |
| R | 203 | | RS1/16SS330J |
| R | 204 | | RAB4CQ330J |
| R | 205 | | RAB4CQ330J |
| R | 206 | | RAB4CQ330J |
| R | 210 | | RS1/16SS330J |
| R | 211 | | RS1/16SS0R0J |
| R | 219 | RESISTOR ARRAY | RAB4CQ472J |
| R | 220 | RESISTOR ARRAY | RAB4CQ472J |
| R | 221 | | RS1/16SS473J |
| R | 222 | | RS1/16SS473J |
| R | 223 | | RS1/16SS220J |
| R | 230 | | RS1/16SS0R0J |
| R | 233 | | RS1/16SS0R0J |
| R | 234 | | RS1/16SS0R0J |
| R | 236 | | RS1/16SS220J |
| R | 237 | | RS1/16SS103J |
| R | 238 | | RS1/16SS220J |
| R | 239 | | RS1/16SS103J |
| R | 240 | | RS1/16SS220J |
| R | 241 | | RS1/16SS103J |
| R | 242 | | RS1/16SS220J |
| R | 243 | | RS1/16SS103J |
| R | 244 | | RS1/16SS220J |
| R | 245 | | RS1/16SS103J |
| R | 248 | | RS1/16SS103J |
| R | 252 | | RS1/16SS103J |
| R | 253 | | RS1/16SS103J |
| R | 256 | | RS1/16SS103J |
| R | 271 | | RS1/10S0R0J |
| R | 273 | | RS1/10S0R0J |
| R | 274 | | RS1/10S0R0J |
| R | 281 | | RS1/16SS0R0J |
| R | 301 | | RS1/16SS473J |
| R | 306 | | RS1/16SS222J |
| R | 307 | | RS1/16SS222J |
| R | 310 | | RS1/16SS102J |
| R | 311 | | RS1/16SS102J |
| R | 312 | | RS1/16SS102J |
| R | 313 | | RS1/16SS473J |
| R | 314 | | RS1/16SS102J |
| R | 317 | | RAB4CQ330J |
| R | 318 | | RAB4CQ330J |
| R | 319 | | RAB4CQ330J |
| R | 320 | | RAB4CQ330J |
| R | 501 | | DCN1171 |
| R | 502 | | DCN1172 |
| R | 503 | | RS1/16SS102J |
| R | 504 | | RS1/16SS102J |
| R | 505 | | RS1/16SS123J |
| R | 506 | | RS1/16SS102J |
| R | 507 | | RS1/16SS102J |
| R | 510 | | RS1/10S1R8J |
| R | 511 | | RS1/10S1R8J |
| R | 515 | | RS1/16SS333J |
| R | 516 | | RS1/16SS123J |
| R | 601 | | RS1/16SS103J |
| R | 602 | | RS1/16SS103J |
| R | 603 | | RS1/16SS102J |
| R | 604 | | RS1/16SS102J |
| R | 1001 | | RS1/16SS103J |
| R | 1003 | CHIP RESISTOR | RS1/16S6800F |
| R | 1004 | | RS1/16S4700F |
| R | 1013 | | RS1/16SS103J |
| R | 1016 | | RS1/16SS103J |
| R | 1017 | | RS1/16SS0R0J |
| R | 1018 | | RS1/16SS0R0J |
| R | 1019 | | RS1/16SS0R0J |
| R | 1021 | | RS1/16SS103J |
| R | 1027 | | RS1/16SS103J |
| R | 1028 | | RS1/16SS103J |
| R | 1029 | | RS1/16SS820J |
| R | 1030 | | RS1/16SS101J |
| R | 1031 | | RS1/16SS221J |
| R | 1032 | RESISTOR ARRAY | RAB4CQ103J |
| R | 1033 | RESISTOR ARRAY | RAB4CQ103J |
| R | 1034 | RESISTOR ARRAY | RAB4CQ103J |
| R | 1035 | RESISTOR ARRAY | RAB4CQ103J |
| R | 1036 | | RS1/16S43R0D |
| R | 1037 | CHIP RESISTOR | RS1/16S1000F |
| R | 1039 | | RS1/16S43R0D |
| R | 1040 | CHIP RESISTOR | RS1/16S1000F |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| R | 1066 | | RS1/16SS473J |
| R | 1067 | | RS1/16SS473J |
| R | 1068 | | RS1/16SS473J |
| R | 1069 | | RS1/16SS473J |
| R | 1071 | | RS1/16SS103J |
| R | 1103 | | RS1/16SS0R0J |
| R | 1107 | | RS1/16SS0R0J |
| R | 1110 | | RS1/16SS0R0J |
| R | 1111 | | RS1/16SS104J |
| R | 1132 | | RS1/16SS470J |
| R | 1153 | | RS1/16SS472J |
| R | 1161 | | RS1/16SS472J |
| R | 1163 | | RS1/16SS472J |
| R | 1164 | | RS1/16SS472J |
| R | 1181 | | RS1/16SS103J |
| R | 1182 | | RS1/16SS103J |
| R | 1191 | | RS1/16SS472J |
| R | 1199 | | RS1/16SS103J |
| R | 1205 | | RS1/16SS103J |
| R | 1219 | | RS1/16SS0R0J |
| R | 1240 | | RS1/16SS220J |
| R | 1241 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1242 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1243 | | RS1/16SS0R0J |
| R | 1244 | | RS1/16SS330J |
| R | 1245 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1246 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1247 | | RS1/16SS220J |
| R | 1248 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1249 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1250 | | RS1/16SS0R0J |
| R | 1251 | | RS1/16SS330J |
| R | 1252 | | RS1/16SS330J |
| R | 1255 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1256 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1257 | | RS1/16SS220J |
| R | 1258 | | RS1/16SS220J |
| R | 1260 | | RS1/16SS220J |
| R | 1261 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1262 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1263 | | RS1/16SS0R0J |
| R | 1264 | | RS1/16SS330J |
| R | 1265 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1266 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1267 | | RS1/16SS220J |
| R | 1268 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1269 | RESISTOR ARRAY | RAB4CQ0R0J |
| R | 1270 | | RS1/16SS0R0J |
| R | 1271 | | RS1/16SS330J |
| R | 1272 | | RS1/16SS330J |
| R | 1273 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1274 | RESISTOR ARRAY | RAB4CQ220J |
| R | 1275 | | RS1/16SS220J |
| R | 1276 | | RS1/16SS220J |
| R | 1277 | | RS1/16SS0R0J |
| R | 1278 | | RS1/16SS0R0J |
| R | 1279 | | RS1/16SS391J |
| R | 1281 | RESISTOR ARRAY | RAB4CQ470J |
| R | 1282 | RESISTOR ARRAY | RAB4CQ470J |
| R | 1283 | RESISTOR ARRAY | RAB4CQ470J |
| R | 1284 | | RS1/16SS470J |
| R | 1285 | | RS1/16SS470J |
| R | 1286 | | RS1/16SS470J |
| R | 1287 | RESISTOR ARRAY | RAB4CQ470J |
| R | 1288 | | RS1/16SS220J |
| R | 1289 | | RS1/16SS220J |
| R | 1301 | | RS1/16S4700F |
| R | 1302 | | RS1/16S1001F |
| R | 1303 | | RS1/16S1001F |
| R | 1312 | | RS1/16S1001F |
| R | 1313 | | RS1/16S1001F |
| R | 1314 | | RS1/16S0R0J |
| R | 1401 | | RS1/16SS220J |
| R | 1402 | | RS1/16SS220J |
| R | 1403 | | RS1/16SS220J |
| R | 1404 | | RS1/16SS220J |
| R | 1405 | | RS1/16SS220J |
| R | 1406 | | RS1/16SS220J |
| R | 1407 | | RS1/16SS220J |
| R | 1411 | RESISTOR ARRAY | RAB4CQ103J |
| R | 1412 | | RS1/16SS103J |
| R | 1413 | | RS1/16SS473J |
| R | 1414 | | RS1/16SS220J |
| R | 1415 | | RS1/16SS220J |
| R | 1416 | | RS1/16SS220J |
| R | 1421 | | RS1/16SS103J |
| R | 1422 | | RS1/16SS103J |
| R | 1802 | | RS1/16SS221J |
| R | 1803 | | RS1/16SS331J |
| R | 1804 | | RS1/16SS330J |
| R | 1812 | | RS1/16SS221J |
| R | 1813 | | RS1/16SS331J |
| R | 1814 | | RS1/16SS330J |
| R | 2301 | | RS1/16SS332J |
| R | 2302 | | RS1/16SS0R0J |
| R | 2304 | | RS1/16SS0R0J |
| R | 2316 | | RS1/16SS103J |
| R | 2501 | | RS1/16SS681J |
| R | 2502 | | RS1/16S1500F |
| R | 2504 | | RS1/16SS681J |
| R | 2505 | | RS1/16S1500F |
| R | 2506 | | RS1/16S0R0J |
| R | 2507 | | RS1/16SS681J |
| R | 2508 | | RS1/16S1500F |
| R | 2510 | | RS1/16SS681J |
| R | 2511 | | RS1/16S1500F |
| R | 2513 | | RS1/16SS681J |
| R | 2514 | | RS1/16S1500F |
| R | 3002 | | RS1/16SS0R0J |
| R | 3003 | | RS1/16SS0R0J |
| R | 3004 | | RS1/16SS0R0J |
| R | 3005 | RESISTOR ARRAY | RAB4CQ103J |
| R | 3006 | | RS1/16SS0R0J |
| R | 3007 | | RS1/16SS0R0J |
| R | 3008 | | RS1/16SS0R0J |
| R | 3009 | | RS1/16SS0R0J |
| R | 3010 | | RS1/16SS0R0J |
| R | 3011 | | RS1/16SS0R0J |
| R | 3012 | | RS1/16SS0R0J |
| R | 3101 | | RS1/16SS0R0J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| R | 3102 | | RS1/16SS0R0J |
| R | 3103 | | RS1/16SS0R0J |
| R | 3104 | | RS1/16SS0R0J |
| R | 3105 | | RS1/16SS105J |
| R | 3106 | | RS1/16SS103J |
| R | 3107 | | RS1/16SS470J |
| R | 3108 | | RS1/16SS470J |
| R | 3109 | | RS1/16SS470J |
| R | 3111 | | RS1/16SS0R0J |
| R | 3113 | | RS1/16SS103J |
| R | 3201 | | RS1/16SS470J |
| R | 3202 | | RS1/16SS470J |
| R | 3203 | | RS1/16SS470J |
| R | 3204 | | RS1/16SS0R0J |
| R | 3206 | | RS1/16SS470J |
| R | 3207 | | RS1/16SS470J |
| R | 3208 | | RS1/16SS470J |
| R | 3209 | | RS1/16SS104J |
| R | 3210 | | RN1/16SE1201D |
| R | 3211 | | RN1/16SE1002D |
| R | 3213 | | RS1/16SS681J |
| R | 3214 | | RS1/16SS682J |
| R | 3215 | | RS1/16SS223J |
| R | 3216 | | RN1/16SE1201D |
| R | 3217 | | RN1/16SE1002D |
| R | 3218 | | RN1/16SE2202D |
| R | 3219 | | RS1/16SS682J |
| R | 3220 | | RS1/16SS101J |
| R | 3221 | | RS1/16SS101J |
| R | 3222 | | RS1/16SS682J |
| R | 3223 | | RN1/16SE2202D |
| R | 3224 | | RS1/16SS101J |
| R | 3227 | | RS1/16SS101J |
| R | 3228 | | RS1/16SS103J |
| R | 3229 | | RS1/16SS103J |
| R | 3230 | | RS1/10S0R0J |
| R | 3232 | | RS1/16SS0R0J |
| R | 3233 | | RS1/16SS0R0J |
| R | 3234 | | RS1/16SS0R0J |
| R | 3301 | | RS1/16SS470J |
| R | 3302 | | RS1/16SS0R0J |
| R | 3305 | | RS1/16SS331J |
| R | 3306 | | RS1/16S4700F |
| R | 3307 | CHIP RESISTOR | RS1/16SS1801F |
| R | 3308 | | RS1/16SS100J |
| R | 3309 | | RS1/16SS681J |
| R | 3310 | | RS1/16SS103J |
| R | 3315 | | RS1/16SS681J |
| R | 3320 | | RS1/16SS681J |
| R | 3327 | | RS1/16SS681J |
| R | 3336 | | RS1/16SS0R0J |
| R | 3337 | | RS1/16SS103J |
| R | 3341 | | RS1/16SS0R0J |
| R | 3342 | | RS1/16SS103J |
| R | 3703 | | RS1/16SS101J |
| R | 3704 | | RS1/16SS101J |
| R | 3705 | | RS1/16SS101J |
| R | 3708 | | RS1/16SS103J |
| R | 3715 | | RS1/16SS0R0J |
| R | 3716 | | RS1/16SS330J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| R | 3720 | | RS1/16SS0R0J |
| R | 3738 | | RS1/16SS103J |
| R | 3808 | | RS1/16SS101J |
| R | 3810 | | RAB4CQ330J |
| R | 3811 | | RAB4CQ330J |
| R | 3812 | | RAB4CQ330J |
| R | 3813 | | RAB4CQ330J |
| R | 3814 | | RS1/16SS220J |
| R | 3816 | | RS1/16SS820J |
| R | 3817 | | RS1/16SS820J |
| R | 3818 | | RS1/16SS220J |
| R | 3820 | | RS1/16SS820J |
| R | 3821 | | RS1/16SS220J |
| R | 3823 | | RS1/16SS820J |
| R | 3824 | RESISTOR ARRAY | RAB4CQ820J |
| R | 3828 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3829 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3830 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3831 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3832 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3833 | RESISTOR ARRAY | RAB4CQ223J |
| R | 3835 | | RS1/16SS330J |
| R | 3837 | | RAB4CQ330J |
| R | 3838 | | RAB4CQ330J |
| R | 3839 | | RAB4CQ330J |
| R | 3840 | | RAB4CQ330J |
| R | 3841 | | RS1/16SS820J |
| R | 3842 | | RS1/16SS562J |
| R | 3843 | | RS1/16SS220J |
| R | 3844 | | RS1/16SS220J |
| R | 3845 | | RS1/16SS820J |
| R | 3846 | | RS1/16SS102J |
| R | 3847 | | RS1/16SS220J |
| R | 3848 | | RS1/16SS820J |
| R | 3849 | | RS1/16SS103J |
| R | 3850 | | RS1/16SS330J |
| R | 3851 | | RAB4CQ330J |
| R | 3857 | | RS1/16SS0R0J |
| R | 3862 | | RS1/16SS0R0J |
| R | 3871 | | RS1/16SS223J |
| R | 4501 | | RS1/10S0R0J |
| R | 4504 | | RS1/10S272J |
| R | 4505 | | RS1/10S272J |
| R | 4507 | | RS1/10S272J |
| R | 4511 | | RS1/16SS0R0J |
| R | 4521 | | RS1/16SS682J |
| R | 4526 | | RS1/16SS153J |
| R | 4531 | | RS1/16SS0R0J |
| R | 4541 | | RS1/16SS0R0J |
| R | 4551 | | RS1/10S0R0J |
| R | 4552 | | RS1/10S0R0J |
| R | 4553 | | RS1/10S0R0J |
| R | 4554 | | RS1/10S0R0J |
| R | 4556 | | RS1/10S0R0J |
| R | 4558 | | RS1/16SS223J |
| R | 4559 | | RS1/16SS0R0J |
| R | 4573 | | RS1/16SS0R0J |
| R | 4574 | | RS1/16S0R0J |
| R | 4575 | | RS1/16S0R0J |
| R | 4581 | | RS1/16SS101J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| R | 4701 | RESISTOR ARRAY | RAB4CQ101J |
| R | 4702 | RESISTOR ARRAY | RAB4CQ101J |
| R | 4703 | | RS1/16SS101J |
| R | 4704 | | RS1/16SS0R0J |
| R | 4705 | | RS1/16SS0R0J |
| R | 4706 | | RS1/16SS0R0J |
| R | 4707 | | RS1/16SS103J |
| R | 4708 | RESISTOR ARRAY | RAB4CQ103J |
| R | 4709 | RESISTOR ARRAY | RAB4CQ103J |
| R | 4710 | | RS1/16SS103J |
| R | 4711 | | RS1/16SS103J |
| R | 4712 | | RS1/16SS103J |
| R | 4713 | | RS1/16SS103J |
| R | 4721 | RESISTOR ARRAY | RAB4CQ101J |
| R | 4722 | RESISTOR ARRAY | RAB4CQ101J |
| R | 4723 | | RS1/16SS470J |
| R | 4724 | | RS1/16SS220J |
| R | 4725 | | RS1/16SS220J |
| R | 4726 | | RS1/16SS220J |
| R | 4727 | | RS1/16SS103J |
| R | 4728 | | RS1/16SS103J |
| R | 4729 | | RS1/16SS0R0J |
| R | 4731 | | RS1/16SS472J |
| R | 4732 | | RS1/16SS472J |
| R | 5101 | RESISTOR ARRAY | RAB4CQ104J |
| R | 5102 | RESISTOR ARRAY | RAB4CQ104J |
| R | 5103 | | RS1/16SS104J |
| R | 5104 | | RS1/16SS104J |
| R | 5105 | RESISTOR ARRAY | RAB4CQ680J |
| R | 5106 | RESISTOR ARRAY | RAB4CQ680J |
| R | 5107 | | RS1/16SS680J |
| R | 5108 | | RS1/16SS680J |
| R | 5109 | | RS1/16SS470J |
| R | 5110 | | RS1/16SS103J |
| R | 5111 | | RS1/16SS102J |
| R | 5113 | | RS1/16SS103J |
| R | 5114 | | RS1/16SS103J |
| R | 5115 | | RS1/16SS103J |
| R | 5116 | | RS1/16SS103J |
| R | 5117 | | RS1/16SS104J |
| R | 5118 | | RN1/16SE9101D |
| R | 5119 | CHIP RESISTOR | RS1/16S56R0D |
| R | 5120 | CHIP RESISTOR | RS1/16S56R0D |
| R | 5121 | CHIP RESISTOR | RS1/16S56R0D |
| R | 5122 | CHIP RESISTOR | RS1/16S56R0D |
| R | 5123 | | RS1/16SS103J |
| R | 5124 | | RS1/16SS103J |
| R | 5125 | | RS1/16SS102J |
| R | 5127 | | RS1/16SS103J |
| R | 5129 | | RS1/16SS820J |
| R | 5130 | | RS1/16SS0R0J |
| R | 5131 | | RN1/16SE5101D |
| R | 5132 | | RS1/16SS0R0J |
| R | 5133 | | RS1/16SS0R0J |
| R | 5134 | | RS1/16SS0R0J |
| R | 5135 | | RS1/16SS0R0J |
| R | 5140 | | RS1/16SS103J |
| R | 5141 | | RS1/16SS0R0J |
| R | 5206 | | RS1/16SS103J |
| R | 5208 | | RS1/16SS103J |
| R | 5214 | | RS1/16SS473J |
| R | 5215 | | RS1/16SS473J |
| R | 5445 | | RS1/10S0R0J |
| R | 5606 | | RS1/16SS820J |
| R | 5607 | | RS1/16SS820J |
| R | 5608 | | RS1/16SS103J |
| R | 5609 | | RS1/16SS103J |
| R | 5610 | | RS1/16SS102J |
| R | 5612 | | RS1/16SS103J |
| R | 5613 | | RS1/16SS102J |
| R | 5614 | | RS1/16SS102J |
| R | 5615 | | RS1/16SS102J |
| R | 5616 | | RS1/16SS103J |
| R | 5618 | | RS1/16SS103J |
| R | 5619 | | RS1/16SS102J |
| R | 5622 | | RS1/16SS820J |
| R | 5623 | | RS1/16SS820J |
| R | 5624 | | RS1/16SS820J |
| R | 5626 | | RS1/16SS220J |
| R | 5627 | | RS1/16SS820J |
| R | 5628 | | RS1/16SS220J |
| R | 5629 | | RS1/16SS820J |
| R | 5630 | | RS1/16SS820J |
| R | 5631 | | RS1/16SS220J |
| R | 5632 | | RAB4CQ330J |
| R | 5638 | | RAB4CQ330J |
| R | 5642 | | RAB4CQ330J |
| R | 5646 | | RAB4CQ330J |
| R | 5650 | | RS1/16SS820J |
| R | 5651 | | RS1/16S1202F |
| R | 5652 | | RS1/16SS101J |
| R | 5657 | | RS1/16SS102J |
| R | 5658 | | RS1/16SS102J |
| R | 5659 | | RS1/16SS102J |
| R | 5661 | | RS1/16SS102J |
| R | 5664 | | RS1/16S0R0J |
| R | 5672 | | RS1/16S0R0J |
| R | 5688 | | RS1/16SS105J |
| R | 5689 | | RS1/16SS152J |
| R | 5690 | | RS1/16SS0R0J |
| R | 5692 | | RS1/16SS0R0J |
| R | 5693 | | RS1/16SS0R0J |
| R | 5702 | | RS1/16SS471J |
| R | 5703 | | RS1/16SS681J |
| R | 5704 | | RS1/16SS151J |
| R | 5705 | | RS1/16S0R0J |
| R | 5706 | CHIP RESISTOR | RS1/16S75R0F |
| R | 5707 | | RS1/16SS104J |
| R | 5708 | | RS1/16SS391J |
| R | 5804 | | RS1/16SS473J |
| R | 5805 | | RS1/16SS472J |
| R | 5806 | | RS1/16SS102J |
| R | 5807 | | RS1/16SS562J |
| R | 5808 | | RS1/16SS472J |
| R | 5809 | | RS1/16SS272J |
| R | 5812 | | RS1/16SS472J |
| R | 5813 | | RS1/16SS272J |
| R | 5814 | | RS1/16SS472J |
| R | 5815 | | RS1/16SS272J |
| R | 5817 | | RS1/16SS472J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| R | 5818 | | RS1/16SS472J |
| R | 5821 | | RS1/16SS472J |
| R | 5822 | | RS1/16SS472J |
| R | 5825 | RESISTOR ARRAY | RAB4CQ220J |
| R | 5826 | RESISTOR ARRAY | RAB4CQ220J |
| R | 5827 | RESISTOR ARRAY | RAB4CQ220J |
| R | 5828 | RESISTOR ARRAY | RAB4CQ220J |
| R | 5829 | | RS1/16SS560J |
| R | 5831 | | RS1/16SS0R0J |
| R | 5833 | | RS1/16SS220J |
| R | 5834 | | RS1/16SS220J |
| R | 5836 | | RS1/16SS103J |
| R | 5837 | | RS1/16SS0R0J |
| R | 5838 | | RS1/16SS330J |
| R | 5839 | | RS1/16SS471J |
| R | 5842 | | RS1/16SS331J |
| R | 5843 | | RS1/16SS331J |
| R | 5844 | | RS1/16SS331J |
| R | 5845 | | RS1/16SS331J |
| R | 5846 | | RS1/16SS472J |
| R | 5848 | | RS1/16SS472J |
| R | 5852 | | RS1/16SS103J |
| R | 5853 | | RS1/16SS103J |
| R | 5854 | | RS1/16SS103J |
| R | 5855 | RESISTOR ARRAY | RAB4CQ100J |
| R | 5856 | | RS1/16SS103J |
| R | 5857 | | RS1/16SS103J |
| R | 5859 | | RS1/16SS103J |
| R | 5861 | | RS1/16SS103J |
| R | 5862 | | RS1/16SS472J |
| R | 5863 | | RS1/16SS681J |
| R | 5864 | | RS1/16SS102J |
| R | 5865 | | RS1/16SS0R0J |
| R | 5867 | | RS1/16SS561J |
| R | 5868 | | RS1/16SS222J |
| R | 5869 | | RS1/16SS472J |
| R | 5870 | | RS1/16SS273J |
| R | 6001 | | RS1/16SS0R0J |

## CAPACITORS

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 100 | | CKSSYB102K50 |
| C | 101 | | CKSSYB102K50 |
| C | 103 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 104 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 105 | | CKSSYB102K50 |
| C | 106 | | CKSSYF104Z16 |
| C | 107 | | CKSSYB681K50 |
| C | 113 | | CKSSYB472K25 |
| C | 114 | | CKSSYB472K25 |
| C | 115 | | CKSSYB103K16 |
| C | 116 | | CKSSYB104K10 |
| C | 117 | | CKSSYB102K50 |
| C | 120 | | CKSSYB104K10 |
| C | 121 | | CKSSYB222K50 |
| C | 122 | | CKSSYB222K50 |
| C | 124 | | CKSSYB104K10 |
| C | 125 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 127 | | CKSSYB473K10 |
| C | 128 | | CKSSYB104K10 |
| C | 129 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 130 | | CKSQYB475K6R3 |
| C | 131 | | CKSSYB683K10 |
| C | 133 | | CKSSYB104K10 |
| C | 134 | | CKSSYB104K10 |
| C | 135 | | CKSSYB103K16 |
| C | 136 | | CKSSYB104K10 |
| C | 137 | | CKSSYB682K25 |
| C | 140 | ELECT. CAPACITOR | DCH1199 |
| C | 141 | ELECT. CAPACITOR | DCH1199 |
| C | 142 | | DCH1201 |
| C | 143 | | DCH1201 |
| C | 144 | | CKSSYB103K16 |
| C | 145 | | CKSSYB103K16 |
| C | 146 | | DCH1201 |
| C | 147 | ELECT. CAPACITOR | DCH1198 |
| C | 148 | ELECT. CAPACITOR | DCH1198 |
| C | 149 | | CKSSYB103K16 |
| C | 152 | | CKSSYB102K50 |
| C | 153 | | CEVW100M16 |
| C | 154 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 155 | ELECT. CAPACITOR | DCH1199 |
| C | 156 | | CKSSYB182K50 |
| C | 157 | | CKSSYB103K16 |
| C | 158 | | CKSSYB103K16 |
| C | 159 | | CKSSYF104Z16 |
| C | 162 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 163 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 164 | | CKSSYB102K50 |
| C | 165 | | CCSSCH220J50 |
| C | 166 | | CCSSCH220J50 |
| C | 167 | | CKSSYF104Z16 |
| C | 169 | | CKSSYB104K10 |
| C | 170 | | CCSSCH470J50 |
| C | 171 | | CKSSYB104K10 |
| C | 172 | | CCSSCH470J50 |
| C | 173 | | CCSSCH470J50 |
| C | 174 | | CCSSCH470J50 |
| C | 176 | | CCSSCH220J50 |
| C | 177 | | CCSSCH220J50 |
| C | 180 | | DCH1201 |
| C | 181 | | CKSQYB475K6R3 |
| C | 182 | | DCH1201 |
| C | 187 | | CKSSYB103K16 |
| C | 188 | | CKSSYB103K16 |
| C | 189 | | CKSSYB102K50 |
| C | 194 | | CKSQYB475K6R3 |
| C | 197 | | CKSSYB104K10 |
| C | 199 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 201 | | CKSSYB104K10 |
| C | 202 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 280 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 281 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 282 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 283 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 284 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 285 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 286 | | DCH1201 |
| C | 287 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 288 | | CKSSYF104Z16 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 289 | | CKSSYB102K50 |
| C | 290 | | CKSSYF104Z16 |
| C | 291 | | CKSSYB102K50 |
| C | 501 | | CKSSYF104Z16 |
| C | 502 | CHIP CERAMIC C. | DCH1263 |
| C | 503 | | CKSRYB471K50 |
| C | 504 | | CKSSYB104K10 |
| C | 505 | | CKSRYB104K25 |
| C | 508 | | CKSSYB102K50 |
| C | 509 | | CCSSCH330J50 |
| C | 510 | | CCSSCH680J50 |
| C | 511 | | CKSQYB105K16 |
| C | 512 | | CKSRYF104Z16 |
| C | 513 | | CKSRYF104Z16 |
| C | 514 | | CKSRYB104K25 |
| C | 515 | | CKSRYB104K25 |
| C | 516 | | CKSSYB104K10 |
| C | 532 | | CKSSYB104K10 |
| C | 803 | | CKSRYF104Z16 |
| C | 824 | | CKSQYF104Z25 |
| C | 832 | | CKSRYF104Z16 |
| C | 1001 | | CKSSYB104K10 |
| C | 1002 | | CKSSYB104K10 |
| C | 1003 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1004 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1005 | | CKSSYB102K50 |
| C | 1006 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1007 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 1008 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1009 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 1010 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1011 | | CKSSYB102K50 |
| C | 1012 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1013 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1014 | | CKSSYB102K50 |
| C | 1015 | | CKSSYB104K10 |
| C | 1016 | | CKSSYB104K10 |
| C | 1017 | | CKSSYB104K10 |
| C | 1018 | | CKSSYB104K10 |
| C | 1019 | | CKSSYB104K10 |
| C | 1020 | | CEVW100M16 |
| C | 1021 | | DCH1201 |
| C | 1022 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1023 | | CKSSYB102K50 |
| C | 1024 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1025 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1026 | | CKSSYB102K50 |
| C | 1027 | | CKSSYB104K10 |
| C | 1028 | | CKSSYB104K10 |
| C | 1029 | | CKSSYB104K10 |
| C | 1030 | | CKSSYB104K10 |
| C | 1031 | | CKSSYB104K10 |
| C | 1032 | | CKSSYB104K10 |
| C | 1033 | | CKSSYB104K10 |
| C | 1034 | | CKSSYB104K10 |
| C | 1035 | | CKSSYB104K10 |
| C | 1036 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1037 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1038 | | CKSSYB102K50 |
| C | 1039 | CHIP ELECT.CAPACITOR | CEVW101M4 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 1040 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1041 | | CKSSYB102K50 |
| C | 1042 | | CCSSCJ3R0C50 |
| C | 1043 | | CCSSCJ3R0C50 |
| C | 1044 | | CCSSCH5R0C50 |
| C | 1045 | | CCSSCH5R0C50 |
| C | 1047 | | CKSSYB104K10 |
| C | 1048 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1049 | | CKSSYB102K50 |
| C | 1050 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1051 | | DCH1201 |
| C | 1052 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1053 | | CKSSYB102K50 |
| C | 1056 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1057 | | CKSSYF104Z16 |
| C | 1058 | | CKSSYB103K16 |
| C | 1059 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1060 | | CKSSYF104Z16 |
| C | 1061 | | CKSSYB102K50 |
| C | 1062 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1063 | | CKSSYF104Z16 |
| C | 1064 | | CKSSYB102K50 |
| C | 1065 | | CKSSYB102K50 |
| C | 1066 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1067 | | CKSSYF104Z16 |
| C | 1068 | | CKSSYB102K50 |
| C | 1101 | | CKSSYB102K50 |
| C | 1104 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1105 | | CKSSYF104Z16 |
| C | 1113 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1202 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1203 | | CKSSYF104Z16 |
| C | 1204 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1205 | | CKSSYB103K16 |
| C | 1206 | | CKSSYB103K16 |
| C | 1207 | | CKSSYB102K50 |
| C | 1208 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1209 | | CKSSYB102K50 |
| C | 1210 | | CKSSYB102K50 |
| C | 1211 | | CKSSYF104Z16 |
| C | 1212 | | CKSSYF104Z16 |
| C | 1213 | | CKSSYF104Z16 |
| C | 1214 | | CKSSYF104Z16 |
| C | 1215 | CHIP PVO CAPACITOR | VCH1268 |
| C | 1216 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1217 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1218 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1219 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1220 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1221 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1222 | | CKSSYF104Z16 |
| C | 1223 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1224 | | CKSSYB103K16 |
| C | 1225 | | CKSSYB103K16 |
| C | 1226 | | CKSSYB102K50 |
| C | 1227 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1228 | | CKSSYB102K50 |
| C | 1229 | | CKSSYB102K50 |
| C | 1230 | | CKSSYF104Z16 |
| C | 1231 | | DCH1201 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 1235 | | DCH1201 |
| C | 1236 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 1291 | | CKSSYF104Z16 |
| C | 1301 | | CKSQYB225K10 |
| C | 1302 | | CKSSYF104Z16 |
| C | 1303 | | CKSSYF104Z16 |
| C | 1304 | | CEVW470M6R3 |
| C | 1312 | | CKSSYF104Z16 |
| C | 1313 | | CKSSYF104Z16 |
| C | 1315 | | CKSQYB225K10 |
| C | 1316 | | DCH1201 |
| C | 1401 | | CKSSYB103K16 |
| C | 1421 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1801 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1802 | | CKSQYB225K10 |
| C | 1803 | | CCSSCH221J50 |
| C | 1804 | | CKSSYB331K50 |
| C | 1805 | | CKSSYB473K10 |
| C | 1811 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 1812 | | CKSQYB225K10 |
| C | 1813 | | CCSSCH101J50 |
| C | 1814 | | CCSSCH151J50 |
| C | 1815 | | CKSSYB473K10 |
| C | 2305 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 2501 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 2502 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 2503 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 2504 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 2505 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 2506 | | DCH1201 |
| C | 3103 | | CEVW101M16 |
| C | 3104 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3105 | | CKSSYF104Z16 |
| C | 3106 | | CKSSYB102K50 |
| C | 3107 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3108 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 3201 | ELECT. CAPACITOR | CEAT102M6R3 |
| C | 3202 | | CKSSYF104Z16 |
| C | 3203 | | CKSSYB102K50 |
| C | 3204 | | CKSSYB331K50 |
| C | 3206 | | CKSSYF104Z16 |
| C | 3207 | | CEVW470M6R3 |
| C | 3211 | | CEVW101M16 |
| C | 3212 | | CKSSYF104Z16 |
| C | 3213 | | CKSSYB561K50 |
| C | 3214 | | CKSSYB561K50 |
| C | 3215 | | CCSSCH820J50 |
| C | 3216 | | CCSSCH820J50 |
| C | 3217 | | CKSSYF104Z16 |
| C | 3218 | | CEVW101M16 |
| C | 3219 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 3220 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3301 | | CCSRCH7R0D50 |
| C | 3302 | | CCSRCH7R0D50 |
| C | 3303 | | CCSSCH150J50 |
| C | 3304 | | CCSSCH820J50 |
| C | 3305 | | CCSSCH220J50 |
| C | 3307 | | DCH1201 |
| C | 3313 | | CKSQYB103K50 |
| C | 3319 | | CKSQYB103K50 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 3325 | | CKSQYB103K50 |
| C | 3332 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3342 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3701 | | CKSSYB103K16 |
| C | 3703 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3704 | | DCH1201 |
| C | 3705 | | CKSSYB102K50 |
| C | 3706 | | CKSSYB102K50 |
| C | 3707 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3738 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3801 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3802 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3803 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 3804 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4501 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4502 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4503 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4504 | | CKSSYF104Z16 |
| C | 4505 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4506 | | CKSSYF104Z16 |
| C | 4507 | | CEVW101M16 |
| C | 4508 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 4509 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 4511 | | CKSQYB475K6R3 |
| C | 4513 | | CKSQYB475K6R3 |
| C | 4515 | | CEVW470M6R3 |
| C | 4516 | | CEVW100M16 |
| C | 4522 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4524 | | CKSQYB475K6R3 |
| C | 4525 | | CKSQYB475K6R3 |
| C | 4531 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4532 | | CKSSYB103K16 |
| C | 4533 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4534 | | DCH1201 |
| C | 4535 | | CKSSYB102K50 |
| C | 4536 | | CKSSYB102K50 |
| C | 4537 | | CKSSYB102K50 |
| C | 4539 | | CKSSYB102K50 |
| C | 4540 | | CKSSYB102K50 |
| C | 4541 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4542 | | CKSQYB225K10 |
| C | 4543 | | CKSSYB102K50 |
| C | 4555 | | CKSQYB475K6R3 |
| C | 4556 | | CKSQYB475K6R3 |
| C | 4557 | | CKSSYB103K16 |
| C | 4558 | | CEVW101M16 |
| C | 4559 | | CEVW101M16 |
| C | 4562 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4563 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4567 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4570 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4571 | | CKSQYB475K6R3 |
| C | 4572 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 4573 | | CKSQYB475K6R3 |
| C | 4581 | | CEVW101M16 |
| C | 4585 | | CKSSYF104Z16 |
| C | 4586 | | CEVW101M16 |
| C | 4701 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4702 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 4703 | CAPACITOR(CERAMIC) | VCG1057 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 4704 | | CKSSYB102K50 |
| C | 4705 | | CKSSYB102K50 |
| C | 4706 | | CKSSYB102K50 |
| C | 5104 | | CKSSYF104Z16 |
| C | 5105 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5106 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5107 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5108 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5109 | | CKSSYF104Z16 |
| C | 5110 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5111 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5112 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5113 | | CKSSYF104Z16 |
| C | 5114 | | CKSSYF104Z16 |
| C | 5115 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5116 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5117 | | CCSSCH120J50 |
| C | 5118 | | CCSSCH120J50 |
| C | 5119 | | CKSSYB271K50 |
| C | 5120 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5121 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 5122 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 5123 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5132 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5133 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5601 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5602 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5603 | | CKSSYF104Z16 |
| C | 5604 | | CKSSYB103K16 |
| C | 5605 | | CKSSYB103K16 |
| C | 5606 | | CKSSYB103K16 |
| C | 5607 | | CKSSYB103K16 |
| C | 5608 | | CKSSYB103K16 |
| C | 5609 | | CKSSYB103K16 |
| C | 5610 | | CKSSYB103K16 |
| C | 5611 | | CKSSYB103K16 |
| C | 5612 | | CKSSYF104Z16 |
| C | 5613 | CHIP ELECT.CAPACITOR | CEVW101M4 |
| C | 5614 | | CKSSYB103K16 |
| C | 5615 | | CKSSYF104Z16 |
| C | 5616 | | CKSSYF104Z16 |
| C | 5617 | | CKSSYB103K16 |
| C | 5622 | | CKSSYB103K16 |
| C | 5623 | | CKSSYB103K16 |
| C | 5624 | | CKSSYB103K16 |
| C | 5625 | | CKSSYB103K16 |
| C | 5626 | | CKSSYB103K16 |
| C | 5627 | | CKSSYB103K16 |
| C | 5628 | | CKSSYB103K16 |
| C | 5629 | | CKSSYB103K16 |
| C | 5630 | | CKSSYB103K16 |
| C | 5631 | | CKSSYB103K16 |
| C | 5632 | | CKSSYB103K16 |
| C | 5640 | | CCSSCH120J50 |
| C | 5641 | | CCSSCH120J50 |
| C | 5702 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5704 | | CEVW1R0M50 |
| C | 5706 | | CKSSYB102K50 |
| C | 5801 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5802 | | CKSSYB102K50 |
| C | 5803 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5804 | | CKSSYB102K50 |
| C | 5805 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5806 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5807 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5808 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5809 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 5812 | | CKSSYF104Z16 |
| C | 5813 | | CKSSYF104Z16 |
| C | 5814 | | CKSRYF104Z16 |
| C | 5815 | | CKSRYB104K25 |
| C | 5816 | | CKSRYB104K25 |
| C | 5817 | | CKSRYB104K25 |
| C | 5818 | | CKSRYB104K25 |
| C | 5819 | | CKSSYB102K50 |
| C | 5820 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 5821 | | CKSSYB102K50 |
| C | 5822 | | CKSSYB102K50 |

## E VDEC ASSY

### MISCELLANEOUS

| | | | |
|---|---|---|---|
| IC | 101 | REGULATOR IC (3.3V) | MM1563DF |
| IC | 102 | REGULATOR IC (1.5V) | MM1561FF |
| IC | 103 | REGULATOR IC | S-1112B50MC-L7J |
| IC | 104 | 3DY/C SEPA & VDEC IC | UPD64015AGM-UEU |
| IC | 105 | SDRAM(16M) | HY57V161610FTP-6 |
| Q | 102 | TRANSISTOR | 2SA1576A |
| Q | 103 | TRANSISTOR | 2SA1576A |
| Q | 104 | TRANSISTOR | 2SA1576A |
| Q | 105 | TRANSISTOR | 2SA1576A |
| Q | 106 | TRANSISTOR | 2SC4081 |
| Q | 107 | TRANSISTOR | 2SC4081 |
| Q | 108 | TRANSISTOR | 2SC4081 |
| Q | 109 | TRANSISTOR | 2SC4081 |
| L | 101 | INDUCTOR | LCYA100J2520 |
| L | 102 | INDUCTOR | LCYA100J2520 |
| L | 103 | INDUCTOR | LCYA100J2520 |
| L | 104 | INDUCTOR | LCYA100J2520 |
| L | 105 | CHIP COIL | LCYA180J2520 |
| L | 106 | CHIP COIL | LCYA180J2520 |
| L | 107 | CHIP COIL | LCYA180J2520 |
| L | 108 | CHIP COIL | LCYA180J2520 |
| F | 101 | EMI FILTER | DTL1106 |
| F | 102 | EMI FILTER | DTL1106 |
| F | 103 | EMI FILTER | DTL1106 |
| F | 104 | EMI FILTER | DTL1106 |
| F | 105 | EMI FILTER | DTL1106 |
| F | 106 | EMI FILTER | DTL1106 |
| F | 107 | EMI FILTER | DTL1106 |
| X | 101 | CRYSTAL RESONATOR | VSS1220 |
| CN | 103 | CONNECTOR POST | B2B-PH |
| CN | 104 | CONNECTOR | VKN2047 |
| CN | 106 | CONNECTOR | HLEM24S-1 |

### RESISTORS

| | | | |
|---|---|---|---|
| R | 102 | | RS1/16SS103J |
| R | 103 | | RS1/16SS0R0J |
| R | 104 | | RS1/16SS470J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| R | 105 | | RS1/16SS470J |
| R | 106 | | RS1/16SS470J |
| R | 107 | | RS1/16SS470J |
| R | 113 | | RS1/16SS103J |
| R | 124 | | RS1/16SS331J |
| R | 125 | | RS1/16SS331J |
| R | 126 | | RS1/16SS331J |
| R | 127 | | RS1/16SS331J |
| R | 128 | | RS1/16S4700F |
| R | 129 | | RS1/16S4700F |
| R | 130 | | RS1/16S4700F |
| R | 131 | | RS1/16S4700F |
| R | 133 | | RS1/10S0R0J |
| R | 136 | CHIP RESISTOR | RS1/16SS1801F |
| R | 137 | CHIP RESISTOR | RS1/16SS1801F |
| R | 138 | CHIP RESISTOR | RS1/16SS1801F |
| R | 139 | CHIP RESISTOR | RS1/16SS1801F |
| R | 140 | | RS1/16SS100J |
| R | 141 | | RS1/16SS100J |
| R | 142 | | RS1/16SS100J |
| R | 143 | | RS1/16SS100J |
| R | 144 | | RS1/16SS681J |
| R | 145 | | RS1/16SS681J |
| R | 146 | | RS1/16SS681J |
| R | 147 | | RS1/16SS681J |
| R | 148 | | RS1/16SS333J |
| R | 149 | | RS1/16SS473J |
| R | 150 | | RS1/16SS473J |
| R | 151 | | RS1/16SS473J |
| R | 152 | RESISTOR ARRAY | RAB4CQ103J |
| R | 154 | RESISTOR ARRAY | RAB4CQ101J |
| R | 155 | RESISTOR ARRAY | RAB4CQ101J |
| R | 156 | RESISTOR ARRAY | RAB4CQ101J |
| R | 157 | | RS1/10S0R0J |
| R | 158 | RESISTOR ARRAY | RAB4CQ101J |
| R | 159 | | RS1/16SS101J |
| R | 160 | RESISTOR ARRAY | RAB4CQ101J |
| R | 161 | | RS1/10S0R0J |
| R | 162 | RESISTOR ARRAY | RAB4CQ101J |
| R | 163 | | RS1/16SS0R0J |
| R | 164 | RESISTOR ARRAY | RAB4CQ101J |
| R | 165 | RESISTOR ARRAY | RAB4CQ101J |
| R | 167 | RESISTOR ARRAY | RAB4CQ101J |
| R | 169 | | RS1/16SS101J |
| R | 170 | | RS1/16SS103J |
| R | 171 | | RS1/16SS473J |
| R | 174 | | RS1/16SS103J |
| R | 175 | | RS1/16SS103J |
| R | 176 | RESISTOR ARRAY | RAB4CQ101J |
| R | 180 | | RS1/16SS101J |
| R | 181 | | RS1/16SS101J |
| R | 182 | | RS1/16SS0R0J |
| R | 183 | | RS1/16SS0R0J |
| R | 184 | | RS1/16SS0R0J |
| R | 185 | | RS1/16SS0R0J |
| R | 186 | | RS1/16SS472J |
| R | 187 | | RS1/16SS472J |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| **CAPACITORS** | | | |
| C | 101 | | CKSSYF104Z16 |
| C | 102 | | CEVW101M16 |
| C | 103 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 106 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 107 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 108 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 109 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 110 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 111 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 112 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 113 | | CKSSYF104Z16 |
| C | 114 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 115 | | CEVW101M16 |
| C | 116 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 117 | | CCSSCH220J50 |
| C | 118 | | CCSSCH220J50 |
| C | 119 | | CCSSCH220J50 |
| C | 120 | | CCSSCH220J50 |
| C | 121 | | CKSSYB102K50 |
| C | 122 | | CKSSYB102K50 |
| C | 123 | | CCSRCH7R0D50 |
| C | 124 | | CCSRCH7R0D50 |
| C | 125 | | CCSRCH7R0D50 |
| C | 126 | | CCSRCH7R0D50 |
| C | 127 | | CCSSCH820J50 |
| C | 128 | | CCSSCH820J50 |
| C | 129 | | CCSSCH820J50 |
| C | 130 | | CKSQYB225K10 |
| C | 131 | | CKSQYB225K10 |
| C | 132 | | CCSSCH820J50 |
| C | 133 | | CCSRCH7R0D50 |
| C | 134 | | CCSRCH7R0D50 |
| C | 135 | | CCSRCH7R0D50 |
| C | 136 | | CCSRCH7R0D50 |
| C | 137 | | CCSSCH150J50 |
| C | 138 | | CCSSCH150J50 |
| C | 139 | | CCSSCH150J50 |
| C | 140 | | CCSSCH150J50 |
| C | 141 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 142 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 143 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 144 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 145 | | CKSQYB103K50 |
| C | 146 | | CKSQYB103K50 |
| C | 147 | | CKSQYB103K50 |
| C | 148 | | CKSQYB103K50 |
| C | 149 | | CKSQYB103K50 |
| C | 150 | CAPACITOR(CERAMIC) | VCG1058 |
| C | 151 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 153 | | CKSSYF104Z16 |
| C | 154 | | CKSSYF104Z16 |
| C | 155 | | CKSSYF104Z16 |
| C | 156 | | CKSSYF104Z16 |
| C | 157 | | CKSSYF104Z16 |
| C | 158 | | CKSSYF104Z16 |
| C | 159 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 160 | | CKSSYB102K50 |
| C | 161 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 162 | | CKSSYF104Z16 |

| Mark | No. | Description | Part No. |
|---|---|---|---|
| C | 163 | | CKSSYF104Z16 |
| C | 164 | | CKSSYF104Z16 |
| C | 165 | | CKSSYF104Z16 |
| C | 166 | | CKSSYF104Z16 |
| C | 167 | | CKSSYF104Z16 |
| C | 168 | | CKSSYF104Z16 |
| C | 169 | | CKSSYF104Z16 |
| C | 170 | | CKSSYF104Z16 |
| C | 171 | | CKSSYF104Z16 |
| C | 172 | | CKSSYF104Z16 |
| C | 173 | | CKSSYF104Z16 |
| C | 174 | | CKSSYF104Z16 |
| C | 175 | | CKSSYF104Z16 |
| C | 176 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 177 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 178 | | CEVW100M16 |
| C | 180 | | CKSSYB102K50 |
| C | 182 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 183 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 184 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 185 | | CKSSYF104Z16 |
| C | 186 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 187 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 188 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 189 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 191 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 192 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 193 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 194 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 195 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 196 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 197 | | CKSRYF104Z25 |
| C | 198 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 199 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 200 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 201 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 202 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 203 | | CKSSYB102K50 |
| C | 204 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 205 | | CKSSYB102K50 |
| C | 206 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 207 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 208 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 209 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 210 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 211 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 212 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 214 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 215 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 216 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 217 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 218 | | CCSRCH100D50 |
| C | 219 | | CCSRCH100D50 |
| C | 220 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 221 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 222 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 223 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 224 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 225 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 226 | | CKSSYF104Z16 |
| C | 228 | CAPACITOR(CERAMIC) | VCG1057 |
| C | 232 | | DCH1201 |
| C | 233 | | CKSSYB102K50 |
| C | 234 | | CEVW101M16 |
| C | 235 | | CKSSYB102K50 |
| C | 236 | | CKSSYB102K50 |
| C | 237 | | CKSSYF104Z16 |
| C | 238 | | CKSSYF104Z16 |
| C | 239 | | CKSSYB102K50 |
| C | 240 | | CKSSYB102K50 |
| C | 241 | | CKSSYF104Z16 |
| C | 242 | | CKSSYF103Z50 |
| C | 243 | | CKSSYB102K50 |
| C | 244 | | CKSSYF104Z16 |
| C | 245 | | CKSSYF104Z16 |
| C | 246 | | CKSSYB102K50 |
| C | 247 | | CKSSYB102K50 |
| C | 248 | CHIP ELECT.CAPACITOR | CEVW221M4 |
| C | 249 | | CKSSYF104Z16 |
| C | 250 | | CKSSYB102K50 |
| C | 251 | | CKSSYB102K50 |
| C | 252 | | CKSSYF104Z16 |
| C | 253 | | CKSSYF104Z16 |
| C | 254 | | CKSSYF104Z16 |

## F SERVICE DVUB ASSY

### MISCELLANEOUS

| | | | |
|---|---|---|---|
| L | 904 (B,217,25) | CHIP FERRITE BEADS | VTL1169 |
| L | 905 (B,219,7) | CHIP FERRITE BEADS | VTL1169 |
| L | 907 (B,219,31) | CHIP FERRITE BEADS | VTL1169 |
| L | 908 (B,217,31) | CHIP FERRITE BEADS | VTL1169 |
| JA | 901 (A,204,59) | 1394-TERMINAL | VKN2028 |
| JA | 902 (A,203,15) | USB CONNECTOR | VKB1226 |
| JA | 903 (A,219,37) | USB CONNECTOR | VKB1227 |
| CN | 901 (A,231,57) | CONNECTOR | VKN1932 |
| CN | 902 (A,231,30) | CONNECTOR | VKN1936 |

### RESISTORS

| | | |
|---|---|---|
| R | 901 (B,222,52) | RS1/16S0R0J |
| R | 902 (B,222,55) | RS1/16S0R0J |
| R | 903 (B,222,63) | RS1/16S0R0J |
| R | 904 (B,222,67) | RS1/16S0R0J |
| R | 905 (B,225,21) | RS1/16S330J |
| R | 906 (B,225,17) | RS1/16S330J |
| R | 907 (B,222,40) | RS1/16S330J |
| R | 908 (A,226,57) | RS1/16S0R0J |
| R | 909 (B,222,43) | RS1/16S330J |
| R | 912 (A,227,69) | RS1/16S0R0J |

### CAPACITORS

| | | |
|---|---|---|
| C | 905 (A,227,29) | CKSRYF105Z10 |
| C | 906 (A,227,32) | CKSRYF105Z10 |
| C | 907 (B,216,49) | CKSRYF104Z25 |
| C | 908 (B,212,67) | CKSRYF104Z25 |

## G POWER SUPPLY ASSY

POWER SUPPLY ASSY has no service part.